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LITERATURE REVIEW ON THE FEASIBILITY OF MULTISPIRAL COMPUTED TOMOGRAPHY IN MIDDLE EAR INFLAMMATION

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Chronic otitis media is usually classified according to severity and duration of the disease. Classification based on severity classifies chronic otitis media into mild, moderate and severe depending on the degree of middle ear involvement and associated complications.

Classification based on duration of disease, on the other hand, classifies chronic otitis media into chronic persistent otitis media (CPOM) and chronic recurrent otitis media (CROM) based on duration and frequency of episodes.

Cholesteatoma can be classified into congenital and acquired cholesteatoma. Congenital cholesteatoma is present at birth and is thought to result from abnormal embryonic development. In contrast, acquired cholesteatoma develops later in life as a result of chronic otitis media or tympanic membrane perforation. Adhesive otitis media is usually classified according to the duration and severity of the disease. It can be classified as acute serous otitis media, subacute serous otitis media or chronic serous otitis media, depending on the duration of fluid accumulation and associated symptoms.

Anatomy of the middle ear:

The middle ear region is located just behind the external ear canal. The tympanic membrane or eardrum serves as a septum separating the inner and outer ear.

The location of the middle ear just behind the tympanic membrane or eardrum makes direct non-invasive evaluation difficult and limited.

CT and other diagnostic imaging modalities can greatly assist in the evaluation of middle ear complications and disease. The air cavity of the middle ear:

The larger part of the middle ear is a pneumatised or air-filled chamber inside the stony part of the temporal bone. This chamber is called the tympanic cavity or tympanic membrane.

The temporal bones make up the lateral (lateral) base of the skull and form parts of the middle and posterior cranial fossae (depressions in the skull).

The tympanic lid, a protrusion of the stony part of the temporal bone, serves as the roof of the tympanic cavity.

Meanwhile, the tympanic membrane serves as the cavity wall or physical barrier to the outer ear.

Bones of the middle ear:

The tympanic cavity contains the three smallest bones of the human body:

- The malleus or hammer with a long handle attached to the centre
- The malleus or hammerhead, which connects the malleus and the stapes.
- The stirrup or stirrup, which has a footplate connected to the oval window of the inner ear or the window of the preauricle.

Together, these three bones are known as the ossicles. The ossicles are named for the shape they most closely resemble.

Together with the eardrum, the middle ear bones transmit sound vibrations to the

Inner ear. pathogenesis:

Pathogenetic features of chronic otitis media depend on a combination of many factors - physical, infectious, thermal, chemical causes of the disease. In the majority of patients pathology develops as a result of not fully treated acute form of purulent otitis media. Various conditions that are accompanied by a sharp weakening of immunity also often become provocative moments. Still, the main reason for doctors is the entry of the staphylococcal pathogen into the middle ear, against the background of creating favourable conditions for the bacterium: weak immunity, frequent or chronic diseases of the nasopharynx, paranasal sinuses.

According to localisation, such forms of chronic middle ear disease are distinguished as mesotympanitis and epitympanitis.

Chronic purulent mesotympanitis may have different pathological and anatomical manifestations depending on the stage of the process. For example, the stage of remission is characterised by the presence of membrane perforation, with localisation in the distended area mainly in the subcentral region. In the case of large diameter perforations, one can see the handle of a hammer hanging loosely over the drum cavity. The borders of the perforation are thin or have the appearance of a compacted scar. The intact areas of the mtembrane appear normal, without characteristic changes. Closer to the medial wall of the cavity, the mucous tissue in the area of the promontory is moist and pale. In the acute stage of mesotympanitis, the visual picture changes dramatically. The external auditory canal is filled with a large amount of purulent mucous discharge. The preserved parts of the mucous membrane are reddened and thickened, and the mucous cavities are ooterfy and reddened. Formation of granulations and small polyps is possible.

Chronic purulent epitympanitis has other pathological and anatomical manifestations, as the process involves both the mucous tissue of the tympanic cavity and the bone tissue of the mastoid process. The inflammatory reaction spreads to the auditory ossicles, the antrum and cave, and the walls of the suprabarbital space. Because of these processes, the term ‘epitympanitis’ refers to pathology affecting the attico-antral zone. This variety is characterized by the marginal localisation of perforation in the unstretched segment of the membrane: it is in this area that there is no tendon ring of the drum. Because of these features, inflammation quickly spreads to the bone tissue, leading to the development of osteitis. The bone tissue is filled with

thick pus, and there is a foul odour. In some cases, granulations may form. The term ‘cholestoma’ is used to describe a lung mass covered with multilayered squamous epithelium. The bone tissue is broken down by the cholestoma - previously referred to in medicine by another term ‘caries’. Increased formation can lead to forceful destruction in the temporal zone, which often causes the development of intracranial complications.

From a clinical and radiological point of view, there are a limited number of structures and pathological formations in the temporal bone with which it is necessary to be familiar in order to skilfully interpret the results of multislice computed tomography (MSCT) or magnetic resonance imaging (MRI) studies of the temporal bone. It is useful to study the region in an organised and systematic way, going through the same checklist of key structures each time. This is the first of a two-part review that presents a practical approach to understanding temporal bone anatomy, localising the pathological process with emphasis on inflammatory and tumour processes, identifying relevant positive and negative factors and making a differential diagnosis.

There are a limited number of structures and pathological lesions in the temporal bone with which it is necessary to be familiar in order to be able to interpret the results of MSCT or MRI of the temporal bone skilfully. It is useful to study the region in an organised and systematic manner, going through the same checklist of key structures each time. The temporal bones make up the lateral base of the skull, forming parts of the middle and posterior fossa. Each temporal bone consists of five bony parts: flat, mastoid, stony, tympanic, and styloid. Several internal canals, internal fractures and external sutures are often visible on CT images and can mimic fractures (pseudofractures). The main anatomical landmarks of the temporal bones are depicted on axial and coronal CT images and are described in the following subsections.

Pathophysiology:

The ciliated, pseudolayered columnar epithelium of the respiratory tract extends up the eustachian tube to the anterior part of the middle ear cavity. Due to the presence of bocaloid cells and mucus-secreting glands, this epithelium is capable of producing mucus. Posteriorly, the mucosa changes irregularly into a simple cuboidal or multilayered epithelium without secretory elements. The medial part of the tympanic membrane and the air cells of the mastoid process are lined with a single layer of cells, the shape of which varies from cuboidal to flat. In the early stages of inflammation, irrespective of the cause, vasodilation of submucosal tissues occurs. Glandular secretion is stimulated by the production of a thin mucoid fluid. Some epithelial cells die and bacteria, which are normally found in this area, multiply on the denuded areas and aggravate the condition. Neutrophils in the blood cause a polymorphonuclear reaction, resulting in a mucopurulent discharge. These secretions

may remain stagnant in the middle ear and mastoid air cell system due to immobility or loss of cilia, including in the eustachian tube.

Dissolution often occurs, but if the condition is prolonged for any reason, such as failure of secretion to drain down the eustachian tube, the number of glands and bocaloid cells increases, and areas previously covered by cuboidal or squamous epithelium become areas of similar but perhaps less differentiated pseudolobular columnar epithelium. Differentiation into squamous epithelium, most often neocorneal, may also occur.Granulation tissue occurs as a result of non-resolution of the inflammatory process. Localised areas of mucosa become hyperplastic with invasion of fibroblasts, capillaries, macrophages, plasma cells and lymphocytes. Granulation tissue may be covered by all types of mucous membranes described above, but because the tissue is often ulcerated, it has no mucous membrane.

Anatomical considerations also contribute to the pathophysiology of middle ear disease. The Eustachian tube plays an important role in the regulation of middle ear pressure, protection against pressure and discharge from the nasopharynx, and clearance (into the nasopharynx) of secretions produced in the middle ear. The Eustachian tube has been found to be highly malleable in infants and young children, providing the Eustachian tube with abnormal patency. The greater permeability of the Eustachian tube not only allows gas to flow freely from the nasopharynx to the middle ear, but also facilitates access for unwanted nasopharyngeal secretions. This increases the likelihood of infection. The length of the eustachian tube is another key anatomical factor in the pathogenesis of inflammatory middle ear disease. The shorter the tube, the more likely it is that secretions can reflux into the middle ear. For example, young children with cleft palate and children with Down syndrome have statistically shorter eustachian tubes than controls of the same age up to 6 years, which may explain the frequent occurrence of unpleasant otorrhoea in these populations.

In conclusion, chronic middle ear disease includes a variety of diseases that affect the middle ear over a long period of time. These diseases can lead to significant complications, including hearing loss and hearing loss. Understanding the definition and classification of chronic middle ear diseases is critical for effective management and prevention. By classifying these conditions according to their underlying causes, clinical features and treatment options, health care providers can provide individualised interventions to improve the condition.

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POSTOPERATIVE MORPHOLOGICAL RESULTS OF THE NASAL CAVITY MUCOUS MEMBRANE

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Abstract: The characteristics of the methods of checking the condition of the mucosa of the cavity of nose after the combined surgical procedure performed in the nasal cavity are presented. Modern advances in medicine in the last decade allow expanding the scope of simultaneous operative procedures. Simultaneous (joint, at the same time) operations allow to eliminate several pathological conditions in the nose and paranasal sinuses at the same time. A strong curvature of the nasal septum is one of the most common local factors associated with the pathology of cavity around the nose. Disruption of nasal breathing leads to changes in mucociliary clearance and creates conditions for inflammation in the cavity around of nose.

Keywords: nasal cavity, FESS, nasal sinuses.

Introduction. In modern medicine, diseases of the nose and paranasal sinuses occupy the main place among the diseases of the ENT organs. With the implementation of FESS surgical procedures, the number of operative procedures performed in the nasal cavity has increased significantly. Currently, elimination of the pathological process based on the analysis of the data of endoscopic examination of the nasal cavity, CT of the nose and adjacent nasal cavities, performed functional examinations, maximum preservation of the mucous membrane of the nose and cavities, anatomical bone structures , correcting their configuration, a treatment plan aimed at restoring the lost functions is being determined. In recent years, a lot of data on functional endonasal preventive operations have been collected.

Strong curvature of the nasal septum is one of the most common local factors associated with the lateral pathology of the nasal cavity. Disruption of nasal breathing leads to changes in mucociliary clearance and creates conditions for inflammation in PNS. In this regard, there is a need to sanitize the center of chronic infection and anatomical correction of nasal structures. Modern medical achievements allow to expand the scope of joint surgical practices. In the literature, there are pathological processes in the area of the nasal septum, deformations of the structures of the lateral wall of the nasal cavity, and the natural opening of the nasal cavities; perforative odontogenic maxillary sinusitis; issues related to the implementation of typical variants of joint operations in the finger-like protrusions of the paranasal sinuses combined with the damage of the orbit have not yet been clarified [5-8]. Although in joint operative practices, to one degree or another, injuries of the mucous membrane occur in different areas of the nasal cavity, the problem of prevention and treatment

of post-operative traumatic bleeding becomes extremely important [4-12]. The hemostatic effect of tamponade is, on the one hand, a strong mechanical pressure on the bleeding vessel, and on the other hand, keeping the blood in the nasal cavity, which ensures faster blood clotting and faster thrombus formation in the vessel. However, this method of stopping bleeding from the nose is quite traumatic for the mucous membrane of the nasal cavity, causing its dysfunction and causing significant pain in patients. Tampon removal is also a painful process. In addition, the presence of a gauze tampon in the nasal cavity is accompanied by strong inflammatory changes of the mucous membrane, accompanied by the appearance of signs of intoxication. The purpose of the study is to conduct a morphological study of the mucous membrane of the nasal cavity in joint surgical procedures. passes with the appearance of signs of intoxication. The purpose of the study is to conduct a morphological study of the mucous membrane of the nasal cavity in joint surgical operations. passes with the appearance of signs of intoxication. The purpose of the study is to conduct a morphological study of the mucous membrane of the nasal cavity in joint surgical procedures.

Purpose of the research work: Assessment of the state of the nasal mucosa in the rhinocytogramm after various surgical procedures.

The results and discussion. Research materials and methods in 2021-2022, 60 patients with diseases of the nose and paranasal cavities were comprehensively examined and treated at the otorhinolaryngology department of the multidisciplinary clinic of the Tashkent Medical Academy. Combined surgical procedures were performed in these patients, and clinical and morphological studies were conducted on the effectiveness of hemostatic agents. In order to determine the degree of influence of the tools used in the nasal cavity on the nasal mucosa after nasal cavity surgical procedures, a cytological study was conducted in patients (table 1).

Table 1

In rhinopathologies, the state of the mucous membrane of the nasal cavity is on a rhinocytogramm

Signs	1 group (n=)			2 groups (n=)			3 groups (n=)		
breath papillary cellular structures derived from the epithelium of the airways	Before the operation	Day 7 after surgery	Day 14 after surgery	Before the operation	Day 7 after surgery	Day 14 after surgery	Before the operation	Day 7 after surgery	Day 14 after surgery
Basal cells	+	+	+	+	+	+	+	+	+
Scattered cells of the respiratory epithelium	-	-	-	-	-	+	+	+	+

Signs of hypersecretion in respiratory epithelial cells	-	-	+	-	+	+	+	+	+
Degenerative-destructive signs in respiratory epithelial cells	-	+	+	-	-	+	-	-	-
Metaplasia of squamous cell elements	-	-	+	-	-	+	-	-	+
Treatment pathomorphosis	-	-	-	-	-	+	+	+	+
Cornification	-	-	+	-	+	+	-	+	+
Fibroblasts	-	+	+	-	+	+	+	+	+
segmented neutrophils	-	-	+	-	-	+	-	+	+
Eosinophils	+	-	+	+	-	+	+	-	+
Lymphocytes	+	+	+	+	+	+	+	+	+
Histiocytes	-	-	+	-	+	+	+	+	+
Phagocytosis	-	-	+	-	-	+	+	+	+
Bacterial flora	+	+	+	+	+	+	+	-	-

As can be seen from the table data, the state of the nasal mucosa was recorded in patients of each group in the cytological material obtained from the mucous membrane of the nasal cavity after the operation. Thus, in patients who used gauze tamponade of the nasal cavity (the first group), clear signs of inflammatory infiltration and dystrophic changes were detected. in the second group of patients, a hemostatic sponge was used after surgery, and in this group, in addition to the symptoms in the above group, therapeutic pathomorphism was determined. Patients in the third group (only the splint was used) were distinguished by the reduction of inflammatory signs and the presence of regenerative process signs, as can be seen from the rhinocytogram of the mucous membrane. Thus, the cytological examination of smears taken from the mucous membrane of the nasal cavity taken from patients with various rhinopathologies in the postoperative period showed that nitric oxide leads to the disruption of intercellular connections in the structure of polypous tissue and slplint after surgery in group 3 patients with the help of it led to the strengthening of the regenerative processes of the mucous membrane of the nasal cavity. The results of cytological studies have once again confirmed the effectiveness of using the splint in the practice of otorhinolaryngologists

Table 2

Description of the changes in the condition of the nasal mucosa 7 days after joint surgical procedures in the nasal cavity in the studied groups of patients

Studied indicators (mean values)		1 groups (p=50) Gauze	2 groups (p=50) "Hemo	3 groups (p=50) "Splint"
Mucous membrane tumor	Strongly	15	2	2
	Not	0	11	10
	Average	5	2	5
Fibrinous vision	Strongly	14	1	4
	Not	1	15	13
	Average	7	3	3
Trophic changes	Strongly	3	0	1
	Not	1	13	10
	Average	4	2	2
Saccharin test indicators (standard 6-8 min.)		29.4±3.1 min.	8.6±0.9 min.	11.8±0.7 min.

CONCLUSION

Changes in the surrounding anatomical structures of the nasal septum specific to the type of curvature of the nasal septum develop, changes in the functional state of the nasal cavity with 3-4 and mixed types of the nasal septum. mucociliary transport in joint pathological conditions of tissues - 29.1 min, Ph-7.36, absorption activity - 78.2, secretion activity - 49.3 mgr, rhinomanometry - UHO - 295, UQ - 0.61 indicators were determined. Therefore, it is advisable to correct the nasal septum and anatomical structures located close to it in patients; 3. Experimental studies have shown that collagen "Splint" does not have damaging and local effects in the early stages. The effect of the surrounding tissue on the sponge is insignificant and non-inflammatory. Adhesion of collagen fibrils of the sponge to the layers of mucous membrane structures in the periphery of the study is observed in the late periods of the study; Use of collagen "Splint" as an alternative to gauze tamponade of the nasal cavity in joint surgical procedures in the nasal cavity, volume of complications during and after surgery in patients , made it possible to improve the results of treatment due to strong trophic changes of the mucous membrane and reduction of pain.

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METHOD FOR CORRECTING LOCALIZED SCLERODERMA

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Annotation. Localized scleroderma (LS) is an inflammatory sclerosing disease of the skin and subcutaneous tissues associated with their atrophy. Depending on the subtype, severity of the disease and localization of the lesion, involvement in the pathological process of adipose tissue, muscles, joints and bones, but not internal organs, is noted. The annual primary incidence of drugs in childhood is 3.4 cases per 1,000,000 child population; in females, the disease occurs 2.6–6 times more often. The wide range of clinical manifestations of the disease has led to the emergence of a large number of different classifications, which take into account the severity, prevalence and depth of the fibrosis process, as a result of which five main clinical forms of LS are distinguished: limited, generalized, linear, deep and mixed. The forms of drugs are not mutually exclusive, since the same patient may experience different manifestations of the disease. One of the most common forms of LS in childhood is the linear form, which is observed in approximately 40–70% of children.

Key words: localized scleroderma, lipofilling, maxillofacial area.

Introduction. The linear form of LS is characterized by the presence of one or more linear bands of compaction, which can affect the skin, subcutaneous tissue, muscles and underlying bone tissue [5]. It is usually a single, unilateral lesion with a linear distribution, affecting the extremities, face, or scalp. Lesions are often located along Blaschko's lines (lines of normal development of skin cells that are invisible under normal conditions, but may appear as pathological rashes with a linear or segmental distribution across the skin). When localized on the scalp, a linear lesion appears, often atrophic and slightly depressed, the skin is smooth, shiny, sometimes pigmented. The linear form tends to deform bone structures, causing depressed lesions, and when localized on the face, it can spread to the zygomatic and nasal areas, and the upper lip [6].

In the case of complete damage to half of the face, the process is classified as Parry-Romberg syndrome (progressive facial hemiatrophy) [7]. The disease has a slow, progressive course and usually develops between the ages of 2 and 20 years. It is characterized by unilateral facial atrophy with damage to the skin, subcutaneous tissue, muscles and underlying bone structures, most often the dermatomes of one or more branches of the trigeminal nerve are affected. Atrophy may be preceded by cutaneous induration and discoloration of the affected skin, such as depigmentation or hyperpigmentation, and scarring alopecia is sometimes observed in affected areas of the scalp [8].

In 40% of cases, progressive facial hemiatrophy is combined with linear scleroderma of the “saber strike” type (en coup de sabre). Currently, many authors combine these forms of drugs into one [9, 10]. The course of LS of the “saber blow” type is usually slowly progressive, and the pathological process is usually limited to damage to one half of the face. This form often begins with swelling of the affected area, followed by the formation of a depressed groove in the frontoparietal region, which can then linearly spread to the scalp with the development of cicatricial alopecia. The groove can reach the nose, upper lip and sometimes the gum, which leads to pronounced deformation of these structures; the distance between the teeth and their direction can be changed. The pathological process may involve the bones of the skull, including the facial region. Jaw deformation can lead to malocclusion, poor implantation and atrophy of tooth roots, as well as a delay in their appearance and development [11].

The hypothesis of the genetic origin of LS as a systemic autoimmune disease is supported by the association of cases with a family history of autoimmune diseases and the presence of common HLA types with rheumatoid arthritis. The systemic nature of the disease is also indicated by the presence of autoantibodies and increased concentrations of chemokines and cytokines associated with T-helper cells circulating in the blood [10].

Along with the signs of a systemic disease, drugs are characterized by signs of a disease caused by inflammatory fibrosis, namely the formation of a lymphocytic and macrophage infiltrate with the deposition of collagen and fibroblasts [11]. Fibrosis is associated with high concentrations of transforming growth factor beta and interleukin 4 [13]. The tendency to replace normal tissues during fibrosis and destruction of adipose tissue leads to phenotypic changes, including facial atrophy and depigmentation [8].

Assessing the activity of a lesion in LS is crucial in choosing therapeutic tactics. For this purpose, various instrumental methods are used, such as infrared thermography, magnetic resonance imaging, Doppler flowmetry, ultrasound examination (ultrasound), as well as multifactorial assessment systems. Among the latter is the modified Localized Scleroderma Skin Severity Index (mLoSSI), which is equivalent to the modified Rodnan Skin Score (mRSS), used for systemic sclerosis. On a scale of 0 to 3, the Rodnan Index evaluates erythema, skin thickening, and new lesions in 18 different anatomical sites and can be used in both adults and children. To assess active inflammatory lesions in LS, as well as the therapeutic effect, the LoSDI skin damage index (Localized Scleroderma Skin Damage Index) was developed, which evaluates cutaneous and subcutaneous atrophy, as well as the degree of dyspigmentation. The combination of LoSDI and the Physician's Global Assessment (PGA) is designated the Localized Scleroderma Cutaneous Assessment

Tool (LoSCAT), which helps the practitioner evaluate both active and inactive lesions [1] .

Therapeutic tactics for managing patients with LS depend on many factors: the activity of the pathological process, localization of rashes (foci of local inflammation (erythema, edema) followed by the formation of sclerosis and/or atrophy of the skin and underlying tissues), form of the disease, age patient. Local therapy usually includes glucocorticosteroids (GCS), calcineurin inhibitors, vitamin D analogues, and phototherapy. Systemic therapy, in turn, is effective for common and severe forms of the disease. The most commonly used systemic approach is a combination of corticosteroids and methotrexate [5]. When planning treatment, it should be borne in mind that clinical effects sometimes appear no earlier than 3 months after the start of therapy [2]. Mycophenolate mofetil (MPM) has been proposed as an alternative immunomodulatory agent in cases of methotrexate resistance [1-4]. *In vitro* studies have shown that MPM suppresses the proliferation of lymphocytes, as well as other types of mesenchymal cells, including smooth muscle cells and fibroblasts [4]. Using a series of cases of drugs resistant to methotrexate therapy, it was shown that the use of MPM leads to a decrease in the degree of skin sclerosis and inflammation (according to infrared thermography and clinical assessment) [6]. In recent studies, the combination of GCS and methotrexate/MFM showed inconsistent effectiveness; several cases of drugs were presented in adolescents who did not respond to such treatment [7]. The effectiveness of an alternative treatment method for drugs in adults and children has been reported using the drug abatacept, a recombinant fusion protein that blocks T-cell activation, approved in the USA and the Russian Federation for the treatment of rheumatoid arthritis [10] .

Results. Particular attention is paid to the search for treatment methods for drugs that can eliminate the consequences of the disease, namely gross cosmetic defects of the face that negatively affect the harmony of the physical and psycho-emotional development of the child. Recently, fat grafting has become the focus of attention (due to the effectiveness of the method in recreating volume and improving skin quality). Fat transfer, including adipocytes, adipose stem cells, endothelial cells and vascular smooth muscle cells, has been shown to reduce inflammation as well as fibrosis by limiting the synthesis of extracellular matrix proteins and promotes increased collagenase activity, as well as providing structural support. support due to proliferation and differentiation of stem cells [11] .

Below is a description of a clinical case of LS in order to demonstrate the possibilities of correcting skin defects in children.

CLINICAL CASE STUDY

Patient A., 1 7 years old, complained of skin atrophy in the forehead area. In 2019 , the diagnosis was made: “Localized scleroderma, linear form.” The skin pathological process at the time of diagnosis was linear in nature and was represented

by a focus of atrophy of the skin and underlying flesh-colored tissues. The lesion was localized on the skin of the forehead with transition to the skin of the scalp and supraorbital region. The size of the skin atrophy is 6 cm in height and 3 cm in width. When performing an ultrasound of the skin and soft tissues of the supraorbital region, forehead, and scalp, thinning of the skin and subcutaneous fat in the supraorbital region, as well as in the forehead on the right, was noted.

The patient received methotrexate therapy for two years with positive dynamics—a decrease in the clinical activity of the disease and stabilization of the skin pathological process (reduction in the severity of inflammation) were noted. After 6 months she was hospitalized for further examination. A general assessment of the state of health and monitoring of the titer of antibodies to single-stranded DNA (negative test) and to the Scl-70 antigen (negative test) were carried out. The patient was recommended for contouring with autologous fat (lipofilling), which was performed in the plastic surgery department.

After treating the surgical field under intravenous anesthesia using a cannula with a diameter of 2.7 mm and a length of 23 cm, syringe lipoaspiration was performed in the area of the inner thighs. Fat was obtained in a volume of 30 ml. A cannula was used to perform a blunt detachment of scar tissue from the underlying structures. The introduction of adipose tissue into the recessed areas was carried out using a cannula with a diameter of 1.6 mm in a volume of 23 ml: in the scalp area - 3 ml, in the frontal area - 15 ml, supra-orbital area - 5 ml. The remaining 7 ml of fat graft were treated with nanotransfer (Tulip nano system, USA), a cell fraction was obtained, which was injected intradermally into the affected area. The postoperative period was uneventful. Methotrexate therapy was discontinued.

Conclusion

Pathogenetic therapy of drugs does not have a significant effect on the elimination of cosmetic defects accompanying the disease. In this regard, the most promising method for correcting a skin defect is contouring with autologous fat (lipofilling), which allows you to recreate the natural contour and fullness in the affected area. Autologous fat grafting may be an effective therapeutic alternative in patients with LS. The presented clinical observation demonstrates the effectiveness of using the method in a teenager - leveling the cosmetic defect of the soft tissue structures of the facial skull.

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RESULTS OF CIRCULATED IMMUNE COMPLEXES IN PATIENTS WITH NOSE DISEASES

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Abstract. Contradictions remain in the approach to the treatment of diseases of the nose and BYoB. Scientific studies on the evaluation of the effectiveness of various tools in diseases of the nose and BYoBs developed against the background of myocarditis are not many and conflicting. In this case, the use of metabolic agents in various pathologies of the myocardium, according to some authors, is undoubtedly necessary, but others believe that their recommendation is not justified. Thus, at present, there are no universally accepted criteria for diagnosing myocardial damage in diseases of the nose and BYoBs around the world, an algorithm for treating such patients has not been developed, and recommendations for this or that treatment have not been substantiated.

Key words : mucociliary clearance, rhinitis, mucous membrane .

Enter. Inflammatory diseases of the nose and ENT are the most common diseases of the ENT organs [3-9]. Nose and BYoB's sharp and relapsing diseases problems learning relevance from that consists of otorhinolaryngology except bronchus- lung pathology , heart and blood vein system , body allergy and local and humorous in immunity changes with organic depends .

In the world each 40 million per year . a person infectious diseases with get sick , 90% of them are flu and acute respiratory disease right will come Scientists that's it confirm that different sharp infectious in diseases of patients Cardiovascular in about 80% vein system of the function violation observation possible [1,2]. Theirs most of them of the organism legitimate functional reaction to be , addition special without treatment independent respectively the end finds _ However of children one in the part heart rhythm violation , often long stretchable pass , sometimes while death with the end to find danger with heart deficiency develops .

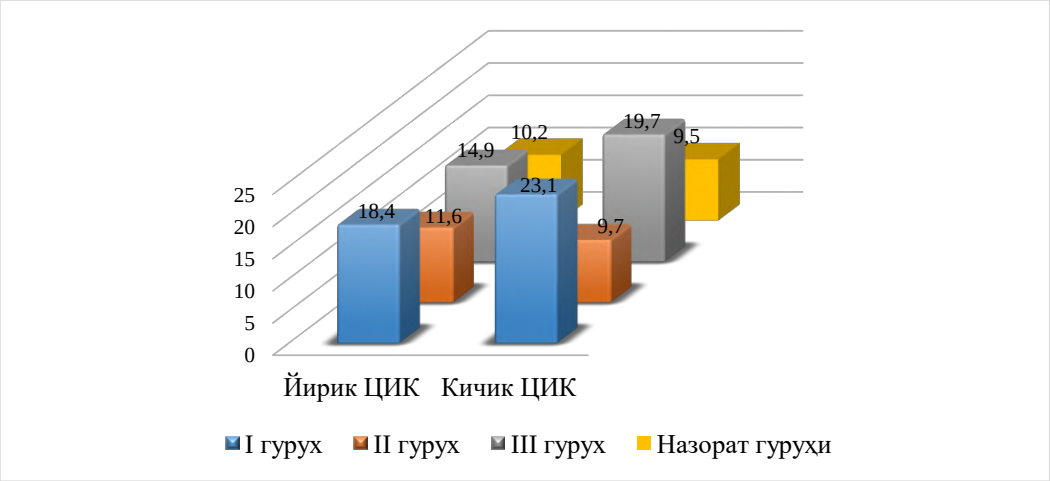
Clinical and epidemiological inspections inflammation markers , heart crown veins and of the myocardium damage between dependence found out that with heart-blood vein system of diseases surface coming and in development infectious to theory has been interest restored [10-16]. The last 10-20 years in myocarditis and pericarditis with illness important way grow up went [7]. of the myocardium non-coronarogenic diseases all heart-blood vein system 7-9% of diseases does [6]. After the flu and O'RK which develops chronic therapeutic pathology and serious somatic diseases between directly contact is available the fact that proved [17,18-24]. From the hospital in 80-85% individuals at exit X-ray , clinical, laboratory and functional-diagnostic

examinations in the indicators changes preserved remains [6,9,10,19,20]. Sharp infectious in diseases of the heart primary damage [21-23], viral infection spent patients with myocarditis and dilatative of cardiomyopathies development not without possibility that is [22]. Heart muscles dystrophy [26], myocarditis and of rheumatism surface in the arrival [25] extremely a lot reason to be , heart of pathology surface on arrival of angina role learning separately current being is considered If transferred from angina after 1 month after heart in the function even irrelevant changes if detected too , to them residual circumstances like regardless , surface came complications - infectious -allergic myocarditis or rheumatism search necessity common done [27]. Acute respiratory infections inflammatory without changes psychovegetative disorders with manifestation dividing " from virus " following asthenia" syndrome with said that it will pass thought available [28,29].

Results . Circulating immune complexes (CICs) at the beginning of the disease, except for 2 groups of patients, it increased unbelievably in all groups and did not decrease to the normal level until the 30th day of the disease (diagram 1) . 1 group in 63.7 % of patients , 2 group in 42.0% of patients and In 35.0% of patients of the 3rd group, TsIK exceeded the upper limit value - 11.2 units .

1 diagram

Dynamics of immune complexes in circulation



In the analysis of these tests, the development of the immunopathological process is observed, which can be divided into several stages. At the beginning of the disease, when the pathogen enters the body, characteristic reactions are determined by the cellular and humoral factors of protection. In the analysis, as non-specific signs of inflammation, increased neutrophil phagocytic activity, leukocytosis, EChT, fibrinogen, aminotransferases, SRO, ASLO, and sialic acid are observed in the analysis. Macrophages initiate an immune response and activate T and V lymphocytes. V-lymph. transforms into plasmatic cells and increases the production of Ig M, and later - ^O. Immunoglobulins of class M and V are considered activators of complement, breaking down and removing antigens from the body. Symptoms of

immunopathological changes in the body remained after clinical recovery in ENT, pneumonia, and angina, and signs of myocardial damage were present. During the 30th day of the disease, the following were observed in the conducted investigations: an increase in EChT in the group of pneumonia and angina; increased fibrinogen in all groups; increased phagocytic activity of neutrophils; ^M and ^O are highly conserved; High titer of RTML and AKAT. Data received In inflammatory diseases of the nose and paranasal sinuses, it indicates an immune-inflammatory damage to the heart, according to the literature, although these changes speak of myocarditis, they can only be explained in a myocardial biopsy.

X ulosa . A reliable change in the results of the biochemical examination of patients in the blood of 1 group of patients was shown in the form of a decrease in rO2, an increase in rSO2, an increase in CFC, LDG, large and small TsIK (in group 1 patients, rSO2 - up to 49.9 mmol/l, 13.1% of the average value of the norm (($r<0.05$) is higher; O2 reduction to 32.6 mmol/l is 50.3% ($r<0.05$) lower than the average values of laboratory norms).

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BIOCHEMICAL RESULTS OF PATIENTS WITH NOSE DISEASES

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Annotation. Infectious diseases, despite modern treatment and prevention capabilities, remain the main pathology of the population. Today it is believed that from 1 to 5% of all patients with acute respiratory diseases, including influenza, have signs of infectious myocarditis **.** The true frequency is very difficult to establish, since latent and mild forms, most characteristic of childhood, range from 24 to 33%, are rarely diagnosed and end independently in the absence of any special treatment or transform into a chronic process with nonspecific symptoms.

Key words: rhinitis, rhinosinusitis , sinusitis, polyp.

Introduction. The immediate cause of death is acute heart failure, progressing against the background of water and electrolyte disturbances, intoxication and the direct effect of the pathogen or its toxin on cardiomyocytes [2-6]. Any infectious disease may be accompanied by certain changes in the functioning of the cardiovascular system of varying degrees of severity and duration.

Impaired function of the cardiovascular system can occur in approximately 80% of patients with various acute infectious diseases [1,4,9,10-15]. Most of them represent a natural functional reaction of the body and are completed independently, without additional special treatment [7,16-19]. But some patients develop arrhythmias and heart failure, often with a long, protracted course, and sometimes with a risk of death.

It is now known that any of the known pathogens can cause myocardial damage, including myocarditis [5,20]. Often the etiological factor is viruses that can directly interact with cardiomyocytes , which leads to cell apoptosis [6].

The diagnosis of myocarditis or cardiomyopathy is beyond doubt, usually in severe forms of myocardial damage. With mild or moderate severity, the observed clinical symptoms of complications are nonspecific and varied, depending not only on the etiology and severity of the manifestations of the main process, but also on the individual characteristics of the organism.

Controversies remain in approaches to the treatment of infectious myocardial lesions. Scientific studies assessing the effectiveness of various drugs for infectious myocarditis that developed against the background of acute respiratory infections are few and contradictory. Metabolic agents for various myocardial pathologies, according to some authors, are undoubtedly necessary, but others consider their prescription unjustified [5,10].

Almost 80% of patients with various acute infectious diseases exhibit certain

changes in cardiovascular activity [8]. Most of them represent a natural functional reaction of the body to the influence of a pathogen and completely disappear as a result of treatment of the underlying pathology. However, in some cases, an independent pathological process develops in the heart, which can have a direct impact not only on the course of the infection, its duration and outcome, but also determine the quality and duration of life [4,9].

The purpose of this study is to identify biochemical changes in the blood during Inflammatory diseases of the nose and paranasal sinuses in patients with myocarditis

Materials and methods of research. The study included 186 patients with myocarditis who were hospitalized at the Republican Specialized Cardiology Center. The patients were divided into two groups. The first group consisted of 80 patients with chronic inflammatory diseases of the nose and paranasal sinuses. The second group consisted of 106 patients without pathology of the nose and paranasal sinuses. All patients were subjected to a comprehensive clinical and laboratory examination, which included a medical history, laboratory tests, nasal endoscopy, X-ray examination and biochemical studies. The control group consisted of 20 healthy volunteers from among the employees of the 2nd clinic of the Tashkent Medical Academy.

Research results. Patients of group I complained of difficulty in nasal breathing (92.5%), nasal discharge (78.4%), impaired sense of smell (22.2%), low-grade fever (36.4%), general weakness (42.5%). Headaches were also often noted (78.4%), more in the maxillary region. Patients of group II had practically no complaints from the nose and paranasal sinuses. Comparative blood test results in the study groups (Table 1) revealed:

Table 1

Indicators of general blood test in patients with myocarditis

Indicators	I , M±m (n =80)	II , M±m (n =106)	Control group, M±m (n =20)
Leukocytes (10^9/l)	7.54±0.60*	6.84 ± 0.52 _ _	6.15±0.39
ESR (mm/hour)	21.05±3.40*	18.73 ± 3.05 * _ _	6.36±0.80
Lymphocytes (%)	22.64±1.96	2 6.45 ± 1.87 _ _	30.87±1.90
Monocytes (%)	4.61±0.56	4.25 ± 0.42 _	3.58±0.37
Eosinophils (%)	1.24±0.26	1.46 ± 0.30 _	2.47±0.32
Band (%)	4.23±0.77	3.2 8 ± 0.62 _	2.66±0.36
Segmented (%)	67.22±1.50	6 4.55 ± 1.62 _ _	60.75±1.86

* - the difference is highly significant, $p < 0.001$.

Laboratory blood tests showed leukocytosis and increased ESR in all patients, especially these changes were more pronounced in patients with chronic inflammatory diseases of the nose and paranasal sinuses. Moreover, in this group the number of leukocytes was 7.54±0.60x10 ^{9} /l, and ESR was increased to 21.05±3.40 mm/hour.

table 2

Indicators of biochemical blood tests in patients with myocarditis and the control group

Indicators	I , M±m (n =80)	II , M±m (n =106)	Control group, M±m (n =20)
Creatinine (µmol /l)	78.12±3.10	82.22±2.92	84.60±2.82
Urea (mmol/l)	5.04±0.23	5.85±0.30	6.65±0.45
ALT (mmol/ g.l)	0.70±0.09	0.64±0.07	0.42±0.06
AST (mmol/ g.l)	1.13±0.23*	0.94±0.18	0.48±0.06
LDH (mmol/ g.l)	7.97±1.24*	7.20±1.03*	4.90±0.28
CPK (mmol/ g.l)	10.68±3.10*	8.76±2.74*	2.86±0.49
Protein (g/l)	73.40±1.51	72.25±1.52	70.18±1.65

* - the difference is highly significant, $p < 0.001$.

As indicated in Table 2, biochemical blood tests also show more pronounced changes in patients of the first group than in patients of the second group.

An increase in AST (1.13±0.23 mmol/ g.l) in patients with myocarditis is associated with cell destruction or increased plasma membrane permeability. There was also an increase in creatine phosphate kinase (CPK) in patients of both groups (10.68±3.10 mmol/ gl and 8.76±2.74 mmol/ gl , respectively), which indicates increasing myocardial damage.

When studying troponin levels I quantitative method in patients of the first group with chronic diseases of the nose and paranasal sinuses, its average concentration was significantly higher ($p = 0.0001$) than in patients of the second group without pathology of the nose and paranasal sinuses (0.49 ± 0.09 Ng / ml and 0.39±0.06 Ng /ml, respectively). Troponin level data I quantitative method are presented in Table 3.

Table 3

Troponin level I quantitative method in patients with myocarditis

Groups	of patients n	Troponin level I , Ng /ml, M±m
Group I	80	0.49±0.09
Group II	106	0.39±0.06
Control group	20	0.05±0.02

* - the difference is highly significant, $p < 0.001$.

In connection with the above, laboratory research showed specific changes in the blood during myocardium, as well as a comparative assessment of pronounced changes during the simultaneous course of inflammation in the myocardium and paranasal sinuses.

Thus, our studies of patients with myocarditis revealed the fact that the clinical course of myocarditis is more pronounced in patients with chronic inflammatory diseases of the nose and paranasal sinuses due to the presence of a focus of infection in the ENT organs.

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THE USE OF THE LIPOFILLING METHOD FOR CORRECTING FACIAL DEFORMITIES

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Annotation. This article provides the results of eliminating scar deformities of the face and body using lipofilling. There were 2 groups of patients: the first group included 12 patients whose skin scars were localized within the dermis and did not affect the subcutaneous fat layer. Second group: 1 4 patients with atrophic scars of the skin and subcutaneous fat layer after injuries and surgical interventions. For the treatment of these patients, the method of autologous fat transplantation was chosen - lipofilling. Outcomes were assessed at 3 months and 9 months. The degree of survival of the autologous fat graft was assessed visually by the quality and type of scar deformities, as well as by ultrasound diagnostics by measuring the thickness of the subcutaneous fat layer over time. Treatment results were assessed according to clinical groups. Good and satisfactory results of surgical treatment, taking into account the additional exposure to high-intensity laser radiation, were observed in 7–2 % of patients in the first group. In the second group, good and satisfactory results were obtained in all patients.

Keywords: lipofilling, pathological scars, high-intensity laser radiation.

Introduction. Every year, specialists pay more and more attention to aesthetics in surgery. This is also due to the increase in the number of plastic surgeons and the high demands of patients. The result of any surgical intervention is ultimately assessed by the patient based on the quality of the postoperative scar. The problem of pathological scarring remains extremely relevant today [2]. Depending on the extent and location, pathological scars cause various organic and functional complications (limitation of joint function, pain and other pathological conditions), as well as cosmetic defects that initiate mental imbalance in patients.

As a result of severe injury or extensive surgery, not only the skin, but also the subcutaneous tissue may be subject to scar deformation. Reconstruction of the subcutaneous layer can be achieved through autologous fat transplantation. The properties of fat autograft as a filler have been known for a very long time. Recent scientific research has shown that the injection of fatty tissue into the area of scars accelerates their healing. Fat is practically indispensable for the correction of various types of scars (for example, retracted scars) in the area of the mammary gland after its removal. Using a fat autograft, it is possible to fill almost all “cavities” and correct unevenness, both on the face and on the body.

The first mentions of lipofilling appeared more than 100 years ago. In 1889, Van der Meulen described the first autologous fat grafting. The procedure consisted of free autotransplantation of fat and omentum between the liver and diaphragm. In 1893, the German surgeon Gustav Neuber (1850–1932) published the first article on fat grafting. He successfully transplanted fat obtained from the patient's upper limb to the inferior orbital rim to correct scar retraction following osteomyelitis [1]. Two years later, another German surgeon, Vincenz Czerny (1842–1916), reported the first transplantation of a lipoma from the gluteal region to the left mammary gland to restore volume after partial resection of the gland and obtained a stable result. In the 19th century, fat tissue transplantation seemed technologically complex and labor-intensive. And interest in fat transfer (lipofilling) faded away for a while. Scientists were looking for a universal filler. At different times they included paraffin, lamb fat, silicone, and hyaluronic acid. But none of the fillers turned out to be effective and safe at the same time [6].

Currently, lipofilling is experiencing its rebirth, and many studies indicate that a universal filler has been found [3].

Materials and methods . The clinic has experience in the surgical treatment of 22 patients with defects in the subcutaneous fat layer and cicatricial deformities of the skin after surgical interventions or a severe form of conglobate (confluent) acne with a history of scarring. This group of patients in the period from August 2016 to August 2017. Treatment was performed using the lipofilling method. The age of the patients ranged from 27 to 53 years. The extent and depth of the scars varied.

Distribution by reason of treatment: 12 patients with post-eruptive scars (post-acne), 1 4 with soft tissue defects after operations, of which 11 with defects of the face and neck and 5 with defects on the body. The operations that caused the deformities were performed more than a year ago. After rejuvenating operations on the face, 9 patients, after liposuction of the thighs, 3 patients. In the remaining 4 patients, scar deformities arose as a result of previous injuries.

In the preoperative period, all patients underwent a comprehensive examination with clinical tests, photo analysis, and ultrasound examination in case of subcutaneous fat deficiency. The patients were divided into two groups depending on the initial clinical picture. First group: 6 patients with post-eruptive scars, in whom the skin scars were localized within the dermis and did not affect the subcutaneous fat layer (patients with a history of conglobate acne); second group: patients with atrophic scars with a deficiency of the underlying subcutaneous fat layer after injuries and surgical interventions. Patients of the first group had previously received treatment in other clinics aimed at reducing the severity of scars using fillers based on hyaluronic acid, without effect. Patients of the second group did not receive treatment for deformities. Upon admission to the clinic, patients were concerned about aesthetic defects and psychological disorders. No functional disorders were identified in the patient groups.

For the treatment of these patients, the method of autologous fat transplantation was chosen - lipofilling [1, 4, 7]. Traditional areas of the body for this method were chosen as the donor zone: the lumbar and hypogastric zone. The procedures were performed under local anesthesia with a working solution of lidocaine 0.25% with epinephrine 1:100000 in an operating room, accompanied by an anesthesiologist. During the operation, blood pressure, pulse, and partial pressure of oxygen were monitored. After infiltration anesthesia of the donor site with a 1.8×150 mm infiltration cannula and exposure, adipose tissue was collected by lipoaspiration. The volume of lipoaspiration varied depending on the task. The minimum volume was 10 ml of fat autograft and the maximum was 60 ml. The autograft was collected using a special cannula: 3-hole collection cannula. 2×100 mm. After washing and settling the lipoaspirate, it was divided into 2 fractions: the actual fat cells suitable for transplantation and the washing water mixed with blood and stroma. Using a special LUERxLUER transfer adapter, fat cells were placed into 1 ml syringes. And through special cannulas for microinjections 1.1×70 mm were introduced under the scars into the subcutaneous fat layer of the patients of the second group. For patients of the first group with post-eruptive scars after preparation, the autologous fat graft was emulsified through a three-way anesthetic tap andfiltration through syringe filter 200 microns. After this, the fat emulsion was injected under the skin in the projection of the scars with a 31G needle [7].

Results . The effectiveness of treatment was assessed after 3 and 9 months, according to the clinical groups. The degree of survival of the autologous fat graft was assessed visually by the quality and type of scar deformities, as well as by ultrasound diagnostics by measuring the thickness of the subcutaneous fat layer over time. An analysis was made of early postoperative complications and long-term results of the operations performed.

Thus, in the early postoperative period, side effects were observed in 2 patients from the first group and 3 patients from the second group. These were significant swelling, ecchymosis and pain that required additional drug therapy. In the late postoperative period, complications were noted in 3 patients: uneven contour - 2 patients, lack of effect - 1 patient. Long-term results were assessed in 2 stages: after 3 and 9 months. In patients of the first group, the results were assessed by analyzing photographs before and after treatment and filling out a treatment success scale. In patients of the second group, an ultrasound examination was additionally performed. The aesthetic result of the operation and the degree of cosmetic impairment of the donor area were also taken into account. Good and satisfactory results of surgical treatment, taking into account the additional impact of high-intensity laser radiation, were observed in 75% of patients in the first group. In the second group, good and satisfactory results were obtained in all 100% of patients. The use of high-intensity laser radiation was necessary to even out skin texture and eliminate erythema[2].

Autologous fat graft injections have resulted in both aesthetic and functional improvements[5]. Although, upon presentation, patients did not note dysfunction. The skin in the injured area became softer and more elastic, the color also improved, it became closer in color to the surrounding tissues.

Conclusions . The use of lipofilling method for the correction of atrophic scars of the skin and underlying subcutaneous fat has a significant advantage in comparison with classical methods - local plastic surgery. For patients with post-eruptive scars, the lipofilling method is practically the only low-traumatic and effective treatment method. The methods of laser ablation and deep peeling used are traumatic and not always predictable. Low trauma, short rehabilitation period, low cost of the procedure and satisfactory results are advantages when choosing a method of treating pathological atrophic, post-eruptive scars of the skin and the underlying subcutaneous fat layer [7–9].

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RESULTS OF NASAL ENDOSCOPIC EXAMINATION IN CHRONIC INFLAMMATORY DISEASES

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Annotation. Rhinosinusitis occurs much more often than it is diagnosed, since in some cases the clinical picture of acute sinusitis is masked by the symptoms of acute viral infections. However, it is believed that sinusitis with influenza and ARVI should be considered not only as their complications, but also as their manifestation. In the development of the inflammatory process in the nasal cavity and paranasal sinuses, in addition to external causes (climatogeographic conditions, level of infectious diseases, environmental conditions, nutritional patterns, stressful situations) that cause disturbances in mucociliary transport, anomalies in the structure of the intranasal structures and the ethmoidal labyrinth can play an important role.

Key words: rhinosinusitis, ARVI, paranasal sinuses.

Introduction. Factors that disrupt the patency of the natural openings of the paranasal sinuses and the mechanisms of their aeration and cleansing include anomalies in the development of the nasal turbinates, curvature of the nasal septum and deformation of the nasal valve, the functions of which have not yet been fully studied [2,3,9,12]. This pathological effect creates conditions for blockade of the ostiomeatal complex, and subsequently the development of an inflammatory process in the paranasal sinuses [4,5,9,11]. Under conditions of secretion stagnation and a decrease in the partial pressure of oxygen in the SNP, favorable conditions are created for the development of bacterial infection [10,11].

Special examination methods, which have been included in the arsenal of otolaryngologists in recent years, allow us to detail the nature of damage to the nasal cavity and paranasal sinuses. [1,5,8,13-17] . This is an instrumental endoscopic study that can be used to objectively assess the degree of nasal breathing impairment [6,7,8,12,18-23].

Endoscopy of the nasal cavity is the most reliable method for studying the nasal cavity, the condition of the paranasal sinuses and their natural anastomoses and plays a leading role in making a diagnosis, objectively assessing the effectiveness of treatment and choosing the optimal surgical option [6,12,24].

Using an endoscope, it is possible to sequentially examine all parts of the nasal cavity, starting with the vestibule and nasal valve. Pay attention to the color of the mucous membrane, the presence and nature of discharge, evaluate the size of the nasal concha, as well as the condition of the pharyngeal tonsil and the mouths of the auditory tubes [7,11,25]. Endoscopy helps to identify nasopharyngeal cysts, as well as confirm the diagnosis of Thornwald's bursa [11] .

The purpose of the study was to study the role of endoscopic examination in chronic inflammatory diseases of the nose and paranasal sinuses.

Material and research methods. We examined 200 patients with chronic inflammatory diseases of the nose and paranasal sinuses. 186 of them were hospitalized at the Republican Specialized Cardiology Center with a diagnosis of

myocarditis, which were divided into two groups. The first group consisted of 80 patients with chronic inflammatory diseases of the nose and paranasal sinuses, the second group consisted of 106 patients without pathology of the nose and paranasal sinuses . All patients were subjected to a comprehensive clinical and laboratory examination, which included taking a medical history, rhinoendoscopy and computed tomography examination. The control group consisted of 20 healthy volunteers from among the employees of the 2nd clinic of the Tashkent Medical Academy. Rhinoendoscopy was performed using an endoscope from Karl Storz (Germany) 0^0, 30^0 and 70^0.

Results of the study and their discussions.

The main complaints presented by patients were difficulty in nasal breathing (92.5%), nasal discharge (78.4%), impaired sense of smell (22.2%), low-grade fever (36.4%), general weakness (42.5%). Patients often noted pain (78.4%) in the maxillary region. CT scans of all patients revealed various combinations of paranasal sinuses involved in the pathological process. In 31 patients, isolated lesions of the maxillary sinuses were found, in 29 – lesions of the maxillary and ethmoidal sinuses, in 14 – lesions of the ethmoidal and frontal sinuses, 6 patients were found to have lesions of the maxillary, ethmoidal and main sinuses . In 45 patients, a curvature of the nasal septum was detected, in 7 - polyps, in 11 - hypertrophy of the ethmoid bulla, in 17 - hypertrophy of the inferior turbinates .

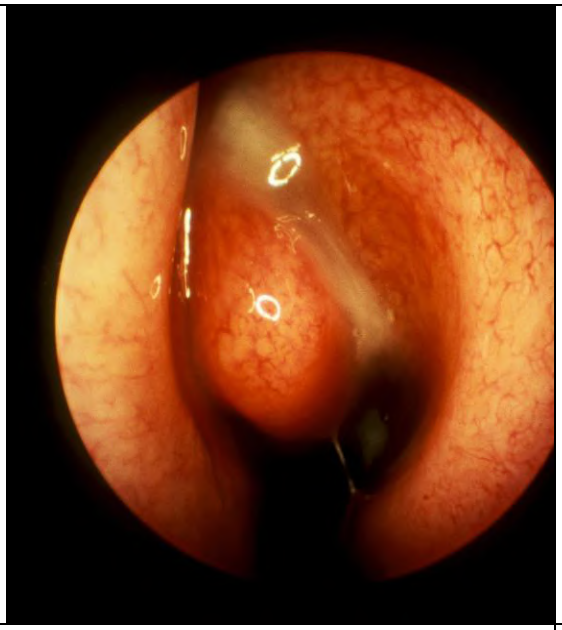

Figure 1. Nasal endoscopy reveals purulent discharge in the left middle meatus

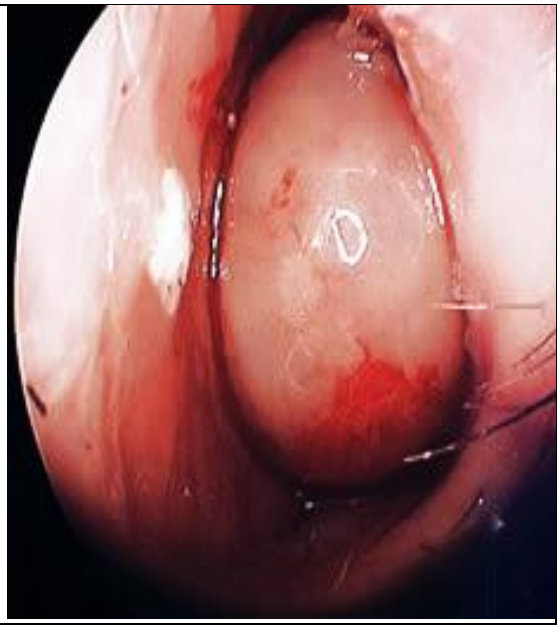

Figure 2. Nasal endoscopy reveals enlargement of the inferior turbinate on the left.

As stated above, an endoscopic examination of the nasal cavity was performed before and after treatment (Figure 1, 2) . The results of the endoscopic study showed that all patients had hyperemia and swelling of the nasal mucosa, 62 had pathological discharge in the nose, 45 had a deviated nasal septum, 7 had polyps in the middle meatus, 13 had pathology of the middle turbinate, 5 – hypertrophy of the uncinate

process, 18 – hypertrophy of the inferior turbinate, 10 patients – hypertrophy of the ethmoid bulla.

In the postoperative period, all patients were prescribed lavage of the nasal cavity by moving drugs according to the Proetz method. We included among the medications the most sensitive to this type of infection in the nose. Local application of the drug Nasonex at a dose of 125 mcg in each half of the nose 2 times a day for 7 days . The criteria for the effectiveness of treatment were: positive dynamics in diagnostic endoscopy nasal cavity, as well as analysis of outpatient records and subjective assessment of his condition by the patient himself.

During endoscopy , in the absence of nasal polyps, 0 is given; polyps that do not extend beyond the middle turbinate and require endoscopic examination for visualization are given 1; polyps extending beyond the middle turbinate and visible through the nasal planum are given 2; category 3 is given to massive polyps that cover the nasal cavity.

The follow-up period ranged from 6 to 24 months. In none of the cases were there any complications or side effects of local application of Bioparox.

A good result was scored 0-6 points, a satisfactory result - 7-10 points, and an unsatisfactory result - 11-14 points.

The results of treatment determined that a good result, corresponding to 0-6 points, was observed in 160 patients (80%), satisfactory, corresponding to 7-10 points - in 36 (18%), unsatisfactory, corresponding to 11-14 points - 4 patients (2%).

From the total number of patients with difficulty in nasal breathing caused by various etiological factors, we selected patients and performed surgical intervention to eliminate them.

In doing so, we were guided by the severity of myocarditis, the age of the patients, complaints of difficulty in nasal breathing and clinical laboratory data. However, in the presence of serious concomitant pathology, especially in elderly patients, surgical intervention was initially limited to consultation methods or minimally invasive treatment methods.

Thus, analysis of the data obtained before and after treatment allows us to conclude **that** the use of endoscopy meets the requirements of modern otorhinolaryngology, is timely and indispensable in the diagnosis and treatment of chronic inflammatory diseases of the nose and paranasal sinuses. The use of endoscopic methods in the treatment of patients with chronic inflammatory diseases of the nose and paranasal sinuses allows us to reduce the number of relapses, which has a beneficial effect on the quality of life of our patients.

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CHRONIC PURULENT RHINOSINUSITIS: A REVIEW OF MEDICAL LITERATURE

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Abrstract: Inflammatory pathology of the ENT organs accounts for 87% of all visits to the otorhinolaryngologist, in the last decade the incidence of paranasal sinusitis (PNS) has increased, and the proportion of hospitalized patients with this pathology has increased almost 3 times every year. The problem of timely diagnosis and treatment of PNS is currently quite relevant, despite the emergence of new modern methods of conservative and surgical treatment. According to various authors, PNS currently ranks first among inflammatory diseases of the upper respiratory tract. The paranasal sinuses (SNS) are a single morphological and functional system with similar etiological factors and mechanisms for the development of diseases, therefore, when studying the epidemiology of the PNS, it is necessary to assess the prevalence of diseases not only of each sinus separately, but also of their combined lesions.

Keywords: inflammation, rhinosinusitis, paranasal sinuses, sinusitis

Introduction.

S.Z. Piskunov, G.Z. Piskunov believe that SNPs are unique anatomical formations that are reserve protective elements of the upper respiratory tract, eye socket and brain [1-3]. This protective function must be understood in the broadest sense of the word, taking into account the mucociliary system, temperature constancy, aerodynamic patterns and other factors. The primary focus of SNP lesions, as a rule, are changes in the anterior and middle cells of the ethmoid sinuses, causing a violation of ventilation and mucociliary cleansing of the maxillary and frontal sinuses. In the anterior sections of the middle nasal passage, the inhaled air changes its direction, which contributes to the deposition of particles suspended in it, including microbes and allergens, and if any obstacles appear in the area of the osteomeatal complex, it disrupts all these functions and forms the primary focus of the inflammatory process. A special area is the North Caucasus, which is the most unfavorable in terms of climatic conditions and, due to the formation of secondary immunodeficiency in many residents [8], is characterized by an increased level of human exposure to harmful factors of the external urbanized environment, which is also detected in other industrial zones [9, 10]. These factors contribute to an increase in the number of PNS, including frontal sinusitis with complications, in the Rostov Region and the Stavropol Territory [11, 12]. Of all SNPs, the inflammatory process most often develops in the frontal sinuses and manifests itself in many patients with severe pain in the brow area

and, somewhat less frequently, nasal discharge. The anatomical prerequisites for the formation of frontal sinuses are not only changes in the area of the ostiomeatal complex, but also structural features of the frontal sinuses themselves [13].

An analysis of spiral computed tomography performed in a large group of patients showed that the anatomical features of the frontal sinuses are the prerequisites for the formation of frontal sinusitis [14], which coincides with the data of our objective studies of the structural parameters of radiographs of people of different age groups [15]. The frontal sinuses lack frontoethmoidal cells and have a large number of bays and semi-partitions, reducing the possibility of frontal sinusitis. At the same time, deformation or abnormal development of the structures of the ostiomeatal complex often leads to narrowing of the frontonasal canal and, as a result, to the formation of frontal sinusitis [16]. Streptococcus pneumoniae, Hemophilus influenzae, Staphylococcus epidirmidis, Streptococcus pyogenes, Moraxella catarrhalis currently play a leading role in the etiology of acute rhinosinusitis. The development of chronic frontal sinusitis is dominated by Staphylococcus aureus, Streptococcus pneumoniae, Hemophilus influenzae, Moraxella catarrhalis [17]. The etiology of modern PNS has changed significantly in favor of the formation of various associations of microorganisms, which were first described by A. E. Essel et al. [eighteen]. In the last two decades, the clinical picture of modern frontal sinusitis began to change towards the appearance of erased and latent forms of the course of the disease. The local pain symptom in frontal sinusitis often loses its leading clinical significance, and the data of additional research methods give an error in 20–30% of cases for various reasons [19]. In doubtful cases, it is necessary to conduct additional diagnostic methods, such as rheofrontography, flowometry, thermography, etc.

The main tasks in the treatment of uncomplicated frontal sinusitis:

- rapid relief of local pain;
- restoration of the normal functioning of the fronto-nasal canal;
- removal of pathological contents from the lumen of the frontal sinus;
- stimulation of reparative processes of the sinus mucosa.

In the treatment of inflammatory diseases of the frontal sinuses, some clinicians [18] use only conservative treatment, based on the assumption of "gravitational" drainage of the sinuses - under the influence of the earth's gravity, they empty themselves from pathological contents. This theory raises considerable doubts, especially if there is a block of the fronto-nasal canal in one of its sections or in the frontal pocket. Some bewilderment is the assertion that the control radiography of the SNP, carried out on the 5-7th day of treatment, revealed a "recovery of pneumatization" of the sinuses, which occurred in 48 out of 50 patients. Probably, we are talking about the restoration of the transparency of the images of the sinuses, but it is known that the restoration of the transparency of the sinus affected by the

inflammatory process on the radiograph occurs no earlier than 30–35 days after the start of treatment [7-15].

We previously considered probing of the inflamed frontal sinuses, which was performed using curved catheters of our design, as one of the elements of the complex sparing treatment of frontal sinusitis. Subsequently, the effectiveness of this method was doubted, taking into account the fact that the mucous membrane of the fronto-nasal canal is one of the thinnest human mucous membranes and has a significant tendency to scarring. Many clinicians agree with this statement, considering probing to be contraindicated for the treatment of frontal sinusitis. A number of authors do not agree with this provision and successfully use probing for the treatment of inflammatory diseases of the frontal sinuses. The principle of a sparing attitude to operated organs and tissues, professed by our teachers in the diagnosis and treatment of ENT pathology, has been maintained in the Rostov ENT Clinic throughout its existence. Our desire to preserve the sparing nature of the treatment of frontal sinusitis has led to the use of trepanopuncture (TP).

LT of the frontal sinus is the most sparing operation in the treatment of uncomplicated frontal sinusitis, which excludes trauma to the mucous membrane of the frontonasal canal and, in particular, the most vulnerable secretory formations at its mouth. Extranasal LT is considered as the imposition of a small-diameter hole in the anterior or lower walls of the frontal sinus, followed by constant drainage of its lumen through the burr canal [16]. TP of the frontal sinuses by the vast majority of devices is carried out in several stages: - the imposition of a hole in the wall of the frontal sinus; - extraction of a drilling tool from it; – installation of an adapter into the formed bone burr canal; – introduction through the adapter into the lumen of the frontal sinus of a device for its long-term drainage – a cannula. TP refers to an instrumental method of treating a disease, in which devices for intervention and cavity drainage play a significant role.

With the progress of science and technology, devices for performing TP of the frontal sinuses have also been improved. After refusing to treat patients with probing, the intervention was carried out by a device for LT produced by the domestic industry, in which we made various technical improvements. Most devices for LT produced in different countries have common shortcomings in the production of intervention: - multi-stage operation; - penetration of purulent exudate into the diploetic layer of the bone of the anterior wall of the sinus or into the soft tissues of the frontal region, which leads to the formation of osteitis, subperiosteal abscess, as well as osteomyelitis of the frontal bone; – entry of bone chips formed during trepanation into the lumen of the frontal sinus. We have developed and put into practice an original device for LT of the frontal sinuses, which provides: – rigid fixation of the instrument on the bone wall of the frontal sinus, preventing it from moving; – one-stage and rapid intervention; – patient safety due to the technical features of the cannula, which limit

the depth of trepanation; - isolation of the pathological contents of the frontal sinus from the tissues of the frontal region by the formation of threads on the walls of the burr canal and their adhesion, while filling the diploetic layer of the bone; - removal of bone chips formed during trepanation.

The design and use of this device prevent all possible intra- and postoperative complications described in the literature, and we have been improving the complex of devices for many years [17]. The therapeutic effect on the inflamed mucous membrane of the frontal sinus was performed through a cannula by introducing drugs into the lumen of the sinus, very often in combination with physiotherapy procedures - direct exposure to laser irradiation and with dialysis of drugs [18] - restoring the patency of the fronto-nasal canal by 2– 3rd day after TP. Some clinicians have experimentally proven that the effect of administering a drug that is absorbed by the mucous membrane of an inflamed SNP is more than 100 times greater than the effect of parenteral administration of the same amount of this drug. This is confirmed by a number of studies and is consistent with the opinion of other authors expressed in different years and completely unrelated to each other. Of no small importance is the period of postoperative treatment, which does not exceed 5-7 bed-days, after which the patient returns to a normal social life, without further treatment for this disease.

We [39], on the basis of significant experience in the treatment of patients with uncomplicated frontal sinusitis, made an attempt to assess the nature of improving the instrumentation and methods of performing LT of the frontal sinuses. It has been clearly shown that over the past 30–40 years, progress in improving the devices and methods for performing LT is extremely insignificant and even in some cases is complicated and extremely traumatic. But, there is also a positive direction in the treatment of uncomplicated frontal sinusitis by a combination of LT with sanitizing endonasal interventions, which gives a positive therapeutic effect [19].

Relapses of the disease in the treatment of patients with uncomplicated acute and chronic AFL frontitis using a device of our design in the ENT clinic of Rostov State Medical University for more than 35 years of observation are less than 0.001% of the entire group of patients, which is not comparable with the rather significant figures given by a number of clinicians. Since 1994, we have not had complications or recurrence of diseases after treatment of patients with frontal sinus LT. Once again, it should be noted that the possibility of developing complications in LT associated with the penetration of a drill into the anterior cranial fossa with damage to tissues inside the skull, which European authors often refer to [20], is excluded when using a tool of our design.

A minor cosmetic soft tissue defect in the brow area after LT becomes hardly noticeable after 6–7 months, the burr canal in the anterior wall of the frontal sinus in most patients is filled with newly formed bone tissue after 1–1.5 years (depending on age). LT is the most effective and sparing of all surgical methods for the treatment of

uncomplicated frontal sinusitis. The basis for such a statement is the experience of carrying out about 2500 interventions in compliance with these principles and using instruments of our design. It should be noted that none of the works, from 1921 to the present, devoted to the treatment of patients with frontal sinusitis with the help of LT, analyzes such a number (in the works of some authors no more than 300 cases are analyzed) of patients treated with any devices with a number of complications and relapses of the disease. A large number of works are devoted to optimizing the surgical treatment of PNS and their complications using endonasal endoscopic surgery, but at the same time, RR Orlandi, DW Kennedy [12] believe that inflammation of the frontal sinus after functional endoscopic intervention can become permanent, iatrogenic disease due to insufficient skills and technical errors of surgeons in a narrow frontal pocket. R. Weber and R. Keerl [60] indicate that the total duration of the healing process in the nasal cavity after endonasal interventions ranges from several weeks to months or more. The literature describes a fairly large number of complications after endonasal surgery, including frequent bleeding from vessels of various sizes and locations, liquorrhea, meningitis, intraorbital hematomas, orbital emphysema [20], and blindness. Rare complications include carotid-cavernous fistula, brain damage, intracranial hemorrhage, pneumatocephalus, brain abscess, malignant hyperthermia, and death as a result of cardiac arrhythmias caused by general anesthesia [21].

Conclusion.

In our opinion, trepanopuncture excludes various complications of frontal sinusitis and is the most sparing type of surgical intervention on the frontal sinuses in the absence of organic changes in the mouth area or in the fronto-nasal canal itself.

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STUDY OF PATHOLOGICAL FACTORS CAUSING THE DEVELOPMENT OF HEARING IMPAIRMENTS IN NEWBORNS

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We analyzed the development of hearing loss factors in newborns. In pediatric cases, the collection of anamnesis is crucial for the early diagnosis of hearing loss. This anamnesis includes questions concerning the perinatal anamnesis of the child, his birth and the first days of life, as well as the postpartum anamnesis before the onset of symptoms, as well as the family history of hearing loss.

Keywords: hearing loss, risk factors for hearing loss

There are many causes of hearing impairment. In the pediatric population, genetic causes are the most common, accounting for more than 50% of cases of hearing loss. Genetic causes include various syndromes, one of the features of which is hearing loss; however, there is a whole form of nonsyndromic genetic hearing loss, in which patients suffer from hearing loss, while the rest of their functions are normal [1]. Mutations, autosomal differences, as well as unknown genetic diversity are associated with this type of hearing loss [2]. Prenatal causes may also be associated with hearing loss in infants. These include exposure to various bacterial or viral infections, as well as various teratogens. Perinatal causes are less common and are mainly associated with prematurity, low APGAR score, neonatal jaundice and sepsis [3]. Postnatal causes, such as meningococcal infection and mumps, can also cause hearing loss as a late complication, as well as head injuries or chronic or recurrent otitis media [4].

Statistics show that hearing disorders are detected in 1 out of 1000 infants, while the frequency of pathology of non-fusion of the lip (palate) and Down syndrome occur 2 times less. Compared with phenylketonuria, the frequency of hearing impairment exceeds 10 times. In the general structure of hearing loss in children, sensorineural lesions account for 91.4%. In children of the first year of life, the percentage of detection of hearing disorders does not exceed 10%.

According to the literature, in 82% of cases, hearing loss in children occurs in the first year of life, that is, in the prelingual period or during the formation of speech. Of this number, only 38.5% of violations are detected in the perinatal period, and only gross hearing impairment is manifested. However, it should be noted that there is no data concerning mild and moderate hearing loss. This is due to late access to specialists, as well as the lack of proper attention from pediatricians and GP doctors (in one third of cases, mild and moderate hearing loss is detected only at the age of 3-7 years) [5].

Numerous researchers have revealed that the auditory function begins to form already in the prenatal period in parallel with the maturation of the structures of the hearing organ. The formation of deprivation changes in the ear is facilitated by limited access of stimuli. In turn, hearing disorders in children cause deviations in speech development, as well as the formation of intelligence and personality of the child as a whole.

The purpose of this study was to study the risk factors for the development of hearing loss in newborns.

Research material and methods: Audiological examination of newborns was carried out on the basis of the maternity complex of the 2-nd clinic of the Tashkent Medical Academy.

A total of 300 newborns were examined. Of these, 58 were premature (gestation period of less than 37 weeks) – 1 st group and 242 were full-term (gestation period of 37 weeks or more) – 2 –nd group newborns. In accordance, the study of the influence of pathological factors on the receptor department and the auditory system was carried out in all examined newborns.

A detailed medical history was collected for all newborns. We conducted a thorough study of prenatal factors that aggravate the course of pregnancy, lead to premature birth and affect the condition of the child after birth. Risk factors for hearing loss and deafness were taken into account, including: infectious and viral diseases of the mother during pregnancy (rubella, influenza, cytomegalovirus, herpes, toxoplasmosis); pregnancy toxicosis; fetal asphyxia; intracranial birth trauma; hyperbilirubinemia; hemolytic disease of the newborn; birth weight less than 1500 g; prematurity; ototoxic drugs used by the child and mother during pregnancy; gestational age of more than 40 weeks; hereditary diseases in relatives accompanied by damage to the auditory analyzer.

Results. The age composition of mothers ranged from 16 to 43 years. 192 children were born from a second or more pregnancy (64%). A burdened obstetric history was noted in 125 (41.7%) women. The data on the presence of medical abortions, spontaneous miscarriages, premature birth, severe toxicosis in the mothers' anamnesis turned out to be quite significant. Thus, gestosis in the 2nd trimester was detected in 33.7% of women in the 1st group and in 13.5% in the second. Gestosis in the 3rd trimester was observed in 12.5% of women of the first group, in 3.8% of the second group of subjects (tab.1).

Table1

The incidence of gestosis in pregnant women (%)

	2nd trimester of pregnancy	3rd trimester of pregnancy
Group 1 (n=58)	32,7	12,5
Group 2 (n=242)	13,5	3,8

As is known, infections that occur in the intrauterine or neonatal period of life are one of the important causes contributing to the spread of deafness worldwide. These infections include herpes simplex virus, CMV, measles virus, mumps, toxoplasmosis, ureoplasmosis. The main risk for a child occurs with primary infection (1-2 trimesters of pregnancy). In children with congenital CMI, hearing loss can reach 25% or more. Thus, sensorineural hearing loss with clinical symptoms can be 58%, and asymptomatic – 7.4%. According to the literature, there is currently a noticeable increase in hearing loss caused by one of the listed.

As a result of the analysis of the results obtained, it was revealed that 51.9% of the mothers of premature newborns examined by us had infectious diseases during the period of this pregnancy. The results also showed that 11.5% of mothers had herpes virus during pregnancy, 7.7% had cytomegalovirus; rubella virus was found in 7.7% of cases (tab 2).

Table 2

Infectious diseases of the mother during pregnancy (%)

	CMV	Rubella	Toxoplasmosis	Herpes
Group 1 (n=58)	11,5	7,7	9,6	23,1
Group 2 (n=242)	9,2	1,0	1,0	20,2

During the study, attention was paid to the somatic state of the mother: infection, in particular, of the urinary tract in mothers, was noted by us in 3% of cases, chronic arterial hypertension - in 2% of women. Chronic gynecological diseases, such as chronic adnexitis, salpingoophoritis, cervical erosion accounted for 17%.

In the intranatal period, a long anhydrous interval was recorded in 4% of cases, bleeding and premature placental abruption were observed in 8 women. Caesarean section for medical reasons was performed on 52 women, which was 11.7%.

It is believed that 40-90% of pregnant women take certain medications, especially in the early stages of pregnancy, which they may not yet suspect. The incidence of birth defects in newborns associated with taking medications by pregnant women is approximately 1%.

The use of medicines during pregnancy always poses a threat to the fetus. It is known that most of the medications used pass through cell membranes and are passively transported through the placenta to the fetus. With prolonged drug treatment, accumulation of these drugs in fetal tissues is possible. In some cases, medications act as teratogens, in other cases they cause a toxic effect and contribute to immaturity or delay in intrauterine growth and development of the newborn. The critical dominant for the occurrence of a teratogenic effect is formed by individual signs (the dose used, the method of application, the duration of use, the phase of embryonic development, the features of the genotype of the child's mother). In clinical conditions, it is not realistic to determine the teratogenicity of the medications used. Only the accumulation of clinical observations makes it possible to isolate drugs with a possible teratogenic effect. Among them, it is especially necessary to highlight those that have an ototoxic effect. These primarily include antibiotics-aminoglycosides. When collecting anamnesis, the use of gentamicin by mothers was detected in 8.7% in group 1. In group 2, 2.8% of mothers used ototoxic antibiotics during pregnancy (tab 3).

Table 3

The use of ototoxic drugs during pregnancy

	Name of the drug (antibiotic)		
	Gentamicin	Kanamycin	Other
Group 1 (n=58)	4	1	0
	7,0 %	1,7 %	0 %
Group 2 (n=242)	11	0	0
	2,8 %	0 %	0 %

Table 4

The frequency of anemia in pregnant women (%)

	2 trimester			3 trimester		
	1 degree	2 degree	3 degree	1 degree	2 degree	3 degree
Group 1 (n=58)	30,6	18,4	10,2	24,7	18,1	15,6
Group 2 (n=242)	32,7	1,9	1,9	38,5	1,9	1,9

Comparison of factors aggravating somatic and obstetric anamnesis (tab.3.6), showed that the interaction of the above factors led to the birth of a premature baby. For most women, as a rule, it was the result of several factors.

In accordance with the objectives of the study, we also studied the pathological conditions of newborns. Table 5 presents the pathological conditions detected in the

newborns examined by us. A clinical analysis of the somatic state of the neonatal infants we observed showed that children had one or another perinatal lesion of the central nervous system. They are more often diagnosed with hypoxic-ischemic CNS lesion, which was noted in 53% of cases, intraventricular hemorrhage and hemorrhage into brain tissue were detected by neonatologists-neuropathologists in 29.7 children (12.7%), hydrocephalus was detected in 1% of cases.

Table 5

Pathological condition in newborns (%)

	Group 1 (n=58)	Group 2 (n=242)
Asphyxia in childbirth	36	17
Hyperbilirubinemia	32	2
Hypoxic-ischemic CNS lesion	49	4
Hemorrhages in brain tissue	28	1,7
Hydrocephalus	1	0
Acute edematous syndrome	2	
Syndrome of respiratory disorders	25	2,5
Pneumonia, tracheobronchitis	5,6	0
Respiratory failure	14,3	2,1
Convulsive syndrome	1	0
Anemia	3	5
Fetal development delay	2	1,6
Intrauterine infection	7,7	1,0
Hemolytic disease of newborns	37	13

The syndrome of respiratory disorders was detected in 27.5% of cases. In addition, these children often develop pneumonia (5.6%) and respiratory failure (16.4%), asphyxia in childbirth was diagnosed in 53% of cases. Hyperbilirubinemia was observed in 34% of the newborns we examined. Intrauterine infection was detected in 8.7% of the subjects. Hemolytic disease of newborns was found in 50% of patients. Anemia of premature babies was found in 8%. 3.6% of newborns had intrauterine development delay.

It is necessary to pay special attention to the fact that 8.1 (37 children) of the newborn premature infants we observed received ototoxic drugs. 10 children were on long-term artificial lung ventilation, which is 2.2% of cases.

Thus, the state of the mother's health, the severity of the pathological pregnancy and its outcome largely determine the condition of the premature baby. In pediatric cases, the collection of anamnesis is crucial for the early diagnosis of hearing loss. This anamnesis includes questions concerning the perinatal anamnesis of the child, his birth and the first days of life, as well as the postpartum anamnesis before the onset of symptoms, as well as the family history of hearing loss. A child with hearing loss may have a lack of reaction to sounds, behavioral problems, speech problems, speech delay or even failure at school, as well as incorrect pronunciation of words. A family history, especially if there is a member with early hearing loss, is also of great importance when hearing loss is suspected.

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THE IMPORTANCE OF MODERN INFORMATION TECHNOLOGIES IN TEACHING PHYSICS

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Abstract: This article highlights the significance of modern information technologies (computer tools) in teaching physics and their effectiveness in modeling physical phenomena and processes.

Key words: simulation, information technologies, logical thinking and abilities, creative assignments.

In traditional education, demonstrations and visual aids are designed for specific time periods, with the educational process being more teacher-centric. The traditional teaching format focuses on achieving educational goals using traditional methods and teaching aids. However, the teacher's capabilities are often limited, and lecture content is restricted by the allotted time, leaving less room for comprehensive and clear explanations within the given timeframe.

Using modern information technologies (computers), the most effective way to conduct physics experiments is through specialized simulation software. These programs enable the simulation of real-world phenomena based on mathematical and physical models.

Several simulation programs are available for modeling phenomena and processes. Among them is the PhET (University of Colorado Boulder), a software that allows users to explore various physics experiments interactively.

They include:
- Simulations and modeling: This involves computing physical laws and simulating them on a computer.
- Virtual laboratories: These programs allow students to conduct experiments interactively.

Teaching lessons using modern information technologies focuses on a "student-centered" approach, employing modern teaching methods and innovative didactic tools to achieve guaranteed results in education. The use of information technologies creates broad opportunities for developing students' cognitive abilities, emphasizes independent learning, fosters exploratory and creative activities, and introduces a flexible lesson structure.

The traditional study of physics includes theoretical knowledge, problem-solving, and laboratory work. This method involves students learning theoretical material, gaining skills and experience through problem-solving, and performing

laboratory tasks to consolidate their theoretical and practical knowledge. While this approach yields effective results, integrating modern information technologies into teaching physics by modeling physical processes on computers is more purposeful for enhancing educational outcomes.

Key steps in the modeling process include:

1. Familiarization with the physical model: Students study the model of the physical process created in the PhET environment.
2. Conducting experiments on a computer: Students perform simple pre-defined experiments using the physical process model in the PhET environment, complete calculations, and answer control questions based on their results.

Modeling physical processes plays a crucial role in improving teaching effectiveness. It involves formulating problems, selecting or constructing models of the studied processes, choosing appropriate methods to solve them, and studying these processes using information technologies. This approach allows students to quickly grasp the material, as it visualizes dynamic processes that are difficult or impossible to observe otherwise. It aids in understanding and analyzing essential physical processes, thereby enhancing students' comprehension of the material.

Using computers for modeling and solving problems, analyzing graphs, and conducting experiments is vital for teaching physics. It also enables students to individualize their education, develop independent thinking, and solve problems effectively.

Benefits include:

- Enhancing the scientific level and depth of learning.
- Improving students' logical thinking and abilities.
- Increasing students' interest in studying physics.

Activities include solving experimental problems, verifying answers through computer models, and completing creative assignments where students independently formulate, solve, and model problems.

The described tasks foster students' understanding of physical processes, creativity, and comprehension of educational material. Using electronic models for class or independent study sessions ensures better understanding, quicker learning, and long-lasting retention of knowledge, sparking students' interest in physics.

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FOYDALI QAZILMALARNI BOYITISHDA GRAVITATSION USULINING ZAMONAVIY YUTUQLARI

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Annotatsiya: Foydali qazilmalarni gravitatsion usuli bilan boyitish — bu minerallar va tog‘ jinslarining zichlik farqlari asosida ajratib olinadigan qadimiy, ammo samarali texnologiya hisoblanadi. Bu usul hozirgi kunda ko‘pgina metall rudalarini, xususan, oltin, qalay, volfram, tantalit va boshqa nodir metall rudalarini boyitishda keng qo‘llaniladi.

Kalit so‘zlar: gravitatsiya; gravitatsion boyitish; minerallar; flotatsiya;

MODERN ACHIEVEMENTS OF THE GRAVITY METHOD IN MINERAL ENRICHMENT

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Introduction: Mineral enrichment using the gravity method is an ancient yet effective technology based on the differences in the density of minerals and rocks. This method is currently widely used in the beneficiation of many metal ores, particularly gold, tin, tungsten, tantalum, and other rare metal ores.

Keywords: Gravitation; gravitational enrichment; minerals; flotation;

Foydali qazilmalarni boyitishda garvitatsiya usuli texnologik jihatdan juda qadimiy bo‘lib, undan foydalangan holda birinchi oltin qazib olish ishlari 1000 yillar avval boshlangan. Yillar o‘tishi bilan texnologiyalar rivojlanib, boyitish samaradorligi sezilarli darajada oshirildi. Gravitatsion texnologiyalar dastlab oddiy shlyuz va yuvish stollari bilan cheklangan bo‘lsa, hozirgi kunda yuqori aniqlikdagi sentrifugal separatorlar va boshqa texnologiyalar qo‘llanilmoqda.

Asosiy fizikaviy tamoyillar

Gravitatsion usulning ishlash prinsipi Nyutonning ikkinchi qonuni asosida belgilanadi: yer qa’ridan olingan materiallarning zichligi va gravitatsiya kuchi bilan birgalikda ta’sir etishi ajratish jarayonining asosini tashkil qiladi. Materialning qattiq fazasi va suyuqlik o‘rtasidagi harakat tenglamasi quyidagicha ifodalanadi:

$$F_t = \eta \cdot S \cdot \frac{dv}{dx} \qquad 1.$$

Bu yerda: F_t*– tortishish kuchiga qarshilik;* $\eta - qovushqoqlik$, S-yuza, $\frac{dv}{dx} - tezlik\ gradienti.$

Ajratish jarayonining mexanizmi

Gravitatsion boyitishda materiallar suyuqlik oqimida yoki havo muhitida turli tezlikda harakatlanadi. Ushbu harakat Stoks qonuniga muvofiq quyidagicha ifodalanadi:

$$v = \frac{2r^2(\rho_m - \rho_s)g}{9\eta} \qquad 2.$$

Bu yerda: $\rho - mineral\ va\ suyuqlik\ zichligi,$ $\eta\ dinamik\ qovushqoqlik, r\ zarraning\ radiusi$

Zamonaviy yutuqlar

Gravitatsion boyitish texnologiyasida zamonaviy yutuqlar asosan yangi uskunalar va avtomatlashtirilgan boshqaruv tizimlari orqali erishilmoqda.

Yangi uskunalar

- **Spiral separatorlar:** Spiral shakldagi kanallar orqali zichligi turlicha bo‘lgan materiallarni ajratish samaradorligi oshiriladi.
- **Jig uskunalari:** Suyuqlik impulslarini qo‘llash orqali zich materiallarni chiqindilardan ajratish mexanizmi takomillashtirilgan.

Bu uskunalarining ishlash jarayoni quyidagi matematik modelga asoslanadi:

$$P=\rho \cdot Q \cdot g \cdot h \qquad 3.$$

P – chiqish quvvati, ρ – suyuqlik zichligi, Q – oqim hajmi, h – gidravlik bosim balandligi.

Texnologiyalar va asbob-uskunalar boyitish jarayonida maksimal darajada sof minerallar olish imkoniyatini beradi. Yangi asboblar, masalan, Centrifugal Jig, past zichlikdagi materiallardan yuqori zichlikdagi minerallarni samarali ajratishga imkon beradi. Sensor texnologiyalari va sun'iy intellekt yordamida boyitish jarayonlarini avtomatlashtirish yirik qazilma boyitish zavodlarida qo‘llanilmoqda. Bu esa ishlab chiqarish jarayonlarini optimallashtirishga, shuningdek, xarajatlarni kamaytirishga yordam beradi. Gravitatsion usul hozirgi kunda ko‘plab yangi sohalarda ham qo‘llanilib kelmoqda. Misol uchun Kichik va o‘rta hajmdagi qazilmalarni boyitishda, E-scrap va qayta ishlash industriyasida ekologik jihatdan xavfsiz va kam xarajatli

bo‘lgani uchun qo‘llanilmoqda. Bundan tashqari Sun‘iy intellekt va avtomatlashtirish AI algoritmlari yordamida boyitish jarayonlarini optimallashtirish va real vaqt rejimida monitoring qilish imkoniyati paydo bo‘ldi. Masalan, spiral separatorlarda turli xil mineral zarrachalar zichligini tahlil qilishda AI orqali sinfiy ajratish amalga oshiriladi.

Ilova sohalari va amaliy misollar.

Gravitatsion usul oltin, temir, ko‘mir kabi resurslarni boyitishda keng qo‘llaniladi. Masalan:

- **Oltin ajratishda:** Gravitatsion usul zichligi yuqori bo‘lgan oltin zarrachalarini tuproqdan ajratish uchun ishlatiladi.
- **Ko‘mir boyitishda:** Suv muhitida zichlik farqiga asoslangan usullar qo‘llaniladi.

Misol uchun, oltinni ajratishda zarrachalarning hajmi va zichligi bo‘yicha quyidagi formula qo‘llaniladi:

$$R=k\cdot(d_{m1}-d_{m2})\cdot g\cdot t \qquad 4.$$

R – zarrachalarning ajratish tezligi, k – ajratish koeffitsienti (boyitish samaradorligini aniqlovchi o'lchov), d_{m1} va d_{m2}– zarrachalarning zichliklari (mineral va chiqindi moddalar uchun mos ravishda), t – ajratish jarayonining davomiyligi.

Gravitatsion boyitishning ekologik aspektlari: Gravitatsion usul kimyoviy reagentlardan foydalanmaydi, bu esa boshqa usullarga qaraganda atrof-muhitga kamroq zarar yetkazadi. Suvni qayta ishlash texnologiyalari yordamida suv resurslaridan samarali foydalanish ham ekologik zararlarni kamaytiradi. Gravitatsion usul flotatsiya va siyanidlash kabi kimyoviy usullardan kamroq zararli. Ayniqsa, suv manbalari yaqinidagi hududlarda ishlatilganda uning ekologik xavfsizligi sezilarli darajada oshadi.

Kelajakdagi ilmiy yondashuvlar va tadqiqotlar: Gravitatsion usulni yangi texnologik materiallar, masalan, lityum, tantal, niobiy kabi nodir yer elementlarida qo‘llash yo‘nalishidagi tadqiqotlar davom etmoqda. Bundan tashqari supergravitatsiya texnologiyalari yordamida katta zichlikda gravitatsion kuchni oshiruvchi texnologiyalar (masalan, sun'iy yo‘ldosh texnologiyalari bilan birgalikda) rivojlantirilmoqda, bu esa boyitish samaradorligini yana ham oshirishga qaratilgan.

Xulosa: gravitatsion usul, qadimiy texnologiya bo‘lishiga qaramay, zamonaviy texnologik yutuqlar bilan boyitilib, hozirgi kunda ham ko‘plab metallarni ajratib olishda samarali bo‘lib qolmoqda. Ayniqsa, energiya tejamkorligi va ekologik xavfsizligi bu usulni qazib olish sanoatida keng qo‘llashga imkon beradi. Kelgusida yangi texnologiyalar va uskunalar yordamida ushbu usul yanada samaraliroq bo‘lishi kutilmoqda.

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РОЛЬ ГЕНЕТИЧЕСКИХ ФАКТОРОВ В РАЗВИТИИ ИШЕМИЧЕСКОЙ БОЛЕЗНИ СЕРДЦА: ОТ МОЛЕКУЛЯРНЫХ МЕХАНИЗМОВ К ПЕРСОНАЛИЗИРОВАННОЙ МЕДИЦИНЕ

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Аннотация. Ишемическая болезнь сердца (ИБС) является одной из ведущих причин заболеваемости и смертности в мире. Несмотря на значительный прогресс в области кардиологии, ключевые механизмы ее возникновения остаются малоизученными, особенно с точки зрения генетической предрасположенности. Современные исследования в области молекулярной генетики открывают новые горизонты для понимания патогенеза ИБС и разработки персонализированных подходов к лечению. В данной статье рассматривается роль генетических факторов в развитии ИБС, начиная от молекулярных механизмов до перспектив персонализированной медицины на основе генетической информации

Ключевые слова: кардиология, патогенез ИБС, генетическая информация, клиническое состояние

Введение. Ишемическая болезнь сердца — это клиническое состояние, вызванное недостаточным кровоснабжением миокарда, что приводит к кислородной недостаточности сердечной мышцы. Наиболее распространенными формами ИБС являются ангина, инфаркт миокарда и хроническая сердечная недостаточность. Эпидемиологические данные свидетельствуют, что в развитии ИБС важную роль играют как экологические, так и генетические факторы. Хотя традиционные факторы риска, такие как гипертония, курение, диабет и высокий уровень холестерина, хорошо известны, генетическая предрасположенность остается важным, но малоизученным аспектом.

Генетические аспекты ишемической болезни сердца. Современные исследования показывают, что ИБС имеет сильную генетическую компонентацию. Близкородственные исследования и исследования близнецов подтвердили наличие генетической предрасположенности к этому заболеванию (Jiang et al., 2016). Генетическая предрасположенность может проявляться как через наследственные аномалии, так и через взаимодействие с факторами внешней среды.

Роль генов, влияющих на липидный обмен. Липидный обмен играет ключевую роль в патогенезе атеросклероза, что является основой для развития ИБС. Гены, связанные с липидным обменом, такие как **PCSK9**, **LDLR** и **APOB**,

оказывают значительное влияние на уровень холестерина в крови и, соответственно, на риск развития ИБС. Например, мутации в гене **LDLR**, который кодирует рецептор для липопротеинов низкой плотности (ЛПНП), могут приводить к семейной гиперхолестеринемии, которая значительно увеличивает риск раннего развития атеросклероза и ИБС (Goldstein & Brown, 2015).

Генетические маркеры воспаления. Воспаление является важным компонентом атерогенеза, и несколько генов, регулирующих воспалительные процессы, были связаны с развитием ИБС. К ним относятся **CRP**, кодирующий С-реактивный белок, и **IL6**, который регулирует уровень интерлейкина-6 — молекулы, участвующей в воспалении и атеросклерозе. Исследования показали, что полиморфизмы в этих генах могут влиять на уровень воспаления и, как следствие, на риск развития атеросклероза и ИБС (Ridker et al., 2008).

Гены, связанные с коагуляцией и тромбообразованием. Мутации в генах, кодирующих белки системы гемостаза, такие как **F2** (ген протромбина) и **F5** (ген фактора V), также могут повышать риск тромбообразования и, соответственно, ИБС. Например, мутация G20210A в гене протромбина связана с увеличением уровня протромбина в крови, что повышает вероятность тромбообразования в коронарных артериях (Sanne et al., 2017).

Молекулярные механизмы, лежащие в основе генетической предрасположенности к ИБС. Генетические факторы, влияющие на ИБС, могут действовать через множество молекулярных механизмов. Одним из них является нарушение метаболизма липидов, что приводит к накоплению липидов в стенках артерий и формированию атеросклеротических бляшек. Другим механизмом является нарушение регуляции воспалительных процессов, что способствует прогрессированию атеросклероза. Генетические вариации, влияющие на экспрессию антиоксидантных и противовоспалительных молекул, могут увеличивать окислительный стресс и воспаление, ускоряя развитие ИБС.

Персонализированная медицина и генетические тесты. Персонализированная медицина предлагает подходы, основанные на индивидуальных особенностях пациента, включая его генетическую предрасположенность. В контексте ИБС, использование генетических тестов для оценки риска развития заболевания может стать важным инструментом для ранней диагностики и профилактики. Генетическое тестирование может помочь выявить пациентов с высоким риском на основе их генетических маркеров, таких как мутации в генах, регулирующих липидный обмен и воспаление, а также выбрать наиболее эффективные методы лечения. Одним из примеров персонализированного подхода является использование ингибиторов **PCSK9** для пациентов с наследственной гиперхолестеринемией, у которых

традиционные методы лечения, такие как статины, оказываются неэффективными (Raal et al., 2015). Также перспективным является использование генетически модифицированных клеток и генотерапии для коррекции наследственных аномалий, связанных с ИБС.

Заключение. Ишемическая болезнь сердца является мультифакторным заболеванием, в развитии которого важную роль играют генетические факторы. Современные исследования позволяют лучше понять молекулярные механизмы, которые лежат в основе генетической предрасположенности к ИБС. Персонализированная медицина, использующая данные о генетических маркерах, открывает новые горизонты для эффективной диагностики и лечения ИБС. В будущем, интеграция генетических данных в клиническую практику позволит значительно улучшить прогноз и качество жизни пациентов с ИБС.

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QUYOSH PANELLARIDA KENG QO'LLANILADIGAN ZAMONAVIY FOTOELEKTRIK HUJAYRALAR YOKI FOTOVOLTAIK (PV) XUJAYRALARNING NUQSONLARI VA ULARNI BARTARAF ETISHNING FIZIK USULLARI

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Annotatsiya: Ushbu tezisda zamonaviy fotoelektrik yoki fotovoltaik (PV) hujayralarning nuqsonlari va ularni fizik usullar yordamida bartaraf etishning muhim jihatlarini tahlil qiladi. Quyosh panellarida qo‘llaniladigan PV hujayralar samaradorligini pasaytiruvchi asosiy muammolar — mikro yoriqlar, potentsialli oksidlanish degradatsiyasi (PID), yorug'lik ta'sirida degradatsiya (LID), issiq nuqtalar, delaminatsiya va korroziya kabi nuqsonlar keltirilgan. Har bir nuqsonning kelib chiqish sabablari va ularni aniqlash hamda bartaraf etish uchun qo‘llaniladigan fizik usullar, jumladan, ultratovush tahlili, infratovush kamerasi yordamida monitoring, maxsus materiallar va himoya qoplamalari kabi yechimlar muhokama qilingan. Maqolada zamonaviy PV hujayralarni takomillashtirish bo'yicha amaliy tavsiyalar beriladi va kelajakda yanada samarali quyosh panellari yaratish bo‘yicha ilmiy tadqiqotlarga e’tibor qaratiladi.

Kalit so‘zlar: Fotovoltik xujayralar; oksidlanish degradatsiyasi; delaminatsiya va korroziya;

DEFECTS IN MODERN PHOTOVOLTAIC (PV) CELLS WIDELY USED IN SOLAR PANELS AND PHYSICAL METHODS TO ELIMINATE THEM

Introduction: Modern photovoltaic (PV) cells, widely used in solar panels as a clean energy source, have some inherent flaws despite their global popularity. It is crucial to analyze these flaws and apply physical methods to eliminate them in order to enhance the efficiency of this technology and maximize their energy production capacity. Below, we will explore several of these flaws.

Keywords: Photovoltaic cells; Oxidation degradation; Delamination and Corrosion;

Kirish: Quyosh panellari uchun keng qo'llaniladigan zamonaviy fotoelektrik hujayralar yoki fotovoltaik (PV) hujayralar, toza energiya manbai sifatida butun dunyoda ommalashgan bo'lsa-da, ularning ba'zi nuqsonlari mavjud. Ushbu texnologiyalarning samaradorligini oshirish va ularning energiya ishlab chiqarish quvvatini maksimal darajada ishlatish uchun bu nuqsonlarni tahlil qilish va ularni

bartaraf etish bo'yicha fizik usullarni qo'llash muhimdir. Quyida bir nechta nuqsonlar bilan tanishib chiqamiz.

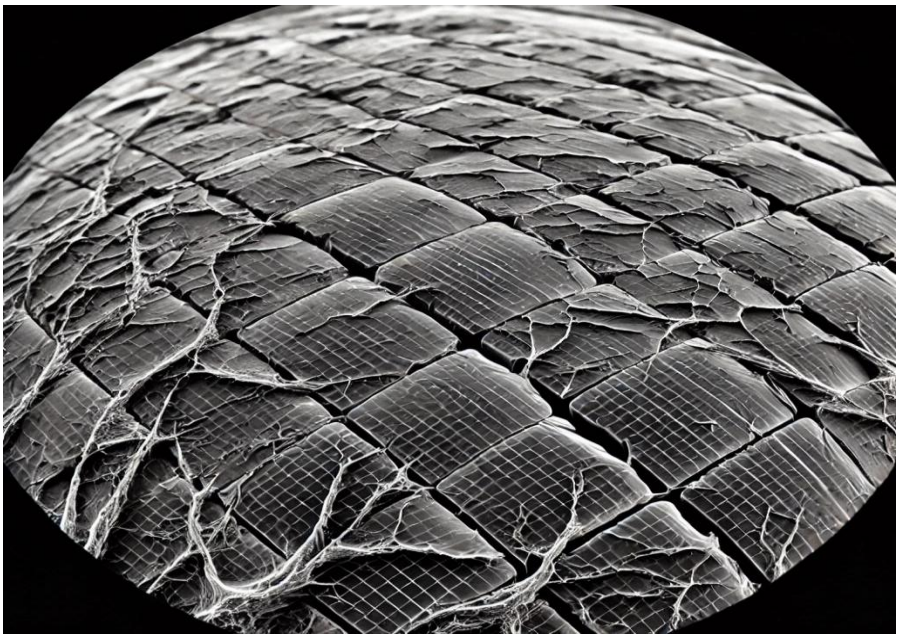
Fotovoltaik (Pv) xujayralarning nuqsonlari.

- **Mikro yoriqlar *(mikrokracks)***

Mikro yoriqlar – bu silikon kristallarida paydo bo'ladigan mayda yoriqlar bo‘lib, ular ishlab chiqarish jarayonida yoki tashqi ta’sirlar, jumladan, quyosh panelining o‘rnatilishi va mexanik stresslar natijasida yuzaga keladi. Bu yoriqlar vaqt o'tishi bilan kengayib, elektr o'tkazuvchanlikka ta'sir qiladi.

Mikro yoriqlarni aniqlash usullari

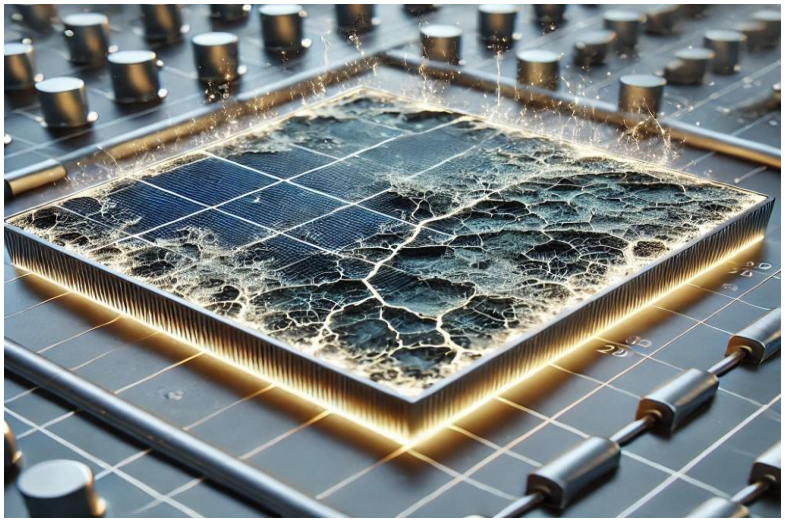
1. **Elektrolyuminestsentsiya (EL) tasvirlash:** Bu usul infraqizil nurlanish yordamida PV hujayralardagi mikro yoriqlarni aniqlashga imkon beradi.
2. **Ultrasonik tekshiruv:** Yoriqlarni aniqlash uchun yuqori chastotali ultratovush tekshiruvi ishlatiladi.
3. **Optik tekshiruv:** Mikroskoplar yoki yuqori aniqlikdagi kameralar yordamida ko‘rinmas yoriqlarni topish mumkin.



1-rasm. *Fotovoltaik hujayralardagi mikro yoriqlarni elektrolyuminestsentsiya usuli yordamida olingan tasvir. Qora va oq fonda mikro yoriqlar notekis chiziqlar sifatida ko‘rinadi.*

- **Potentsialli Oksidlanish Degradatsiyasi (PID)**

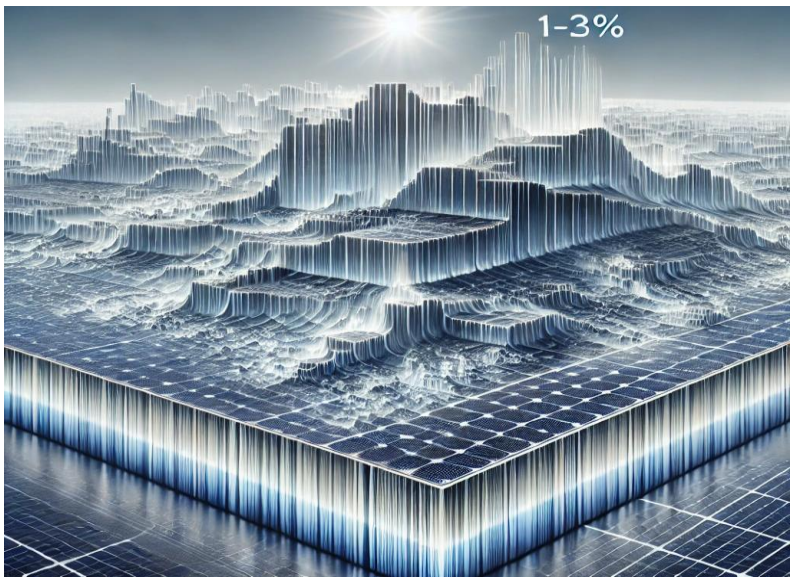
Bu nuqson PV hujayra va ularning atrofidagi ramka orasidagi kuchlanish farqi natijasida hosil bo'ladi, natijada elektr quvvatini yo‘qotish kuzatiladi. PID asosan yomon izolyatsiya yoki tuproqqa ulanmagan tizimlarda uchraydi.



2-rasm. *Potentsialli Oksidlanish Degradatsiyasi (PID) holati tasviri. Unda PV hujayralarning yuzasidagi notekis, quyuqroq yoki xira joylar quvvat yo‘qotilishini ko‘rsatadi. Shuningdek, ramka va hujayralar orasidagi kuchlanish farqi va yomon izolyatsiya tufayli yuzaga kelgan elektr ta’sirlari tasvirlangan.*

- **Yorug'lik ta'sirida degradatsiya (LID)**

LID kristalli silikon PV hujayralarida dastlabki quyosh ta'sirida hosil bo‘ladigan nuqson bo‘lib, dastlabki soatlar yoki kunlarda ishlab chiqarish samaradorligi 1-3% pasayadi.



3-rasm. *Yorug'lik ta'sirida degradatsiya (LID) holatini tasvirlovchi rasm. Unda quyosh nurlari ostida PV hujayralarning dastlabki samaradorligi pasayishi aks ettirilgan. Panel yuzasida xira yoki kamroq yoritilgan joylar samaradorlik yo‘qotilishini ifodalaydi. Bu jarayon quyosh ta'sirining dastlabki soatlari yoki kunlarida yuz beradi.*

- **Issiq nuqtalar**

"Issiq nuqtalar" panelning ma'lum bir qismlarida issiqlikning o'rtacha haroratdan yuqori bo'lishidir. Ular soyalar, axloqsizlik yoki hujayra nuqsonlari natijasida hosil bo'ladi. Bu esa panelning ishlash samaradorligiga ta'sir qiladi va uning yomonlashishiga olib keladi.

- **Delaminatsiya**

Ushbu nuqson laminatsion qatlamlarning ajralishi natijasida paydo bo'ladi. Delaminatsiya namlik yoki texnologik xatolar tufayli bo‘lishi mumkin va bu jarayon nurlanish samaradorligini kamaytiradi.

- **Korroziya**

Ayniqsa, namlik yuqori bo'lgan mintaqalarda PV hujayralarning elektr kontaktlari va bog'lovchi elementlari korroziyaga uchraydi. Bu jarayon elektr o'tkazuvchanlikni pasaytiradi.

Korroziyaning paydo bo‘lish sabablari

1. **Namlikning kirib kelishi:** PV panellarning yoriqlari yoki delaminatsiya bo‘lishi natijasida ichki qismga namlik kiradi.
2. **Tuz va kimyoviy moddalarning ta’siri:** Dengiz yaqinidagi mintaqalarda havodagi tuz korroziya jarayonini tezlashtiradi.
3. **Materiallarning sifatsizligi:** Past sifatli izolyatsion material yoki himoya qoplamalari metall komponentlarni korroziyadan himoya qila olmaydi.
4. **Elektrokimyoviy reaksiyalar:** Metall yuzalar va atrof-muhit o‘rtasida elektrokimyoviy potentsial farqi bo‘lsa, korroziya sodir bo‘ladi.

Korroziyaning oqibatlari

1. **Elektr o'tkazuvchanlikning pasayishi:** Metall kontaktlarning korroziyasi elektr tokini samarali o'tkazishni cheklaydi.
2. **Samaradorlikning pasayishi:** Kontaktlarning ishlashi yomonlashganida, hujayraning umumiy quvvati pasayadi.
3. **Umumiy degradatsiya:** Korroziya davom etsa, bu panellarni to‘liq ishlamay qolishiga olib keladi.

Oldini olish choralari

1. **Yuqori sifatli materiallardan foydalanish:** Himoya qoplamalari korroziyaga chidamli materiallardan ishlab chiqarilishi kerak.
2. **Muhrlashni yaxshilash:** Panellarning chetlarini va qatlamlarini namlik kirib kelishidan himoya qilish.
3. **Kuzatish va texnik xizmat:** Namlik yuqori bo‘lgan hududlarda doimiy texnik tekshiruv o‘tkazish kerak.

Nuqsonlarni bartaraf etishning fizik usullari.

1. **Mikro yoriqlarni aniqlash va bartaraf etish**

PV hujayralarda mikro yoriqlarni aniqlash uchun ultratovush yoki

elektroluminestsent tahlil usullari qo‘llaniladi. Aniqlangan yoriqlarni termal yoki mexanik tuzatish usullari orqali bartaraf etish imkoniyati mavjud.

2. **PID bartaraf etish**

Potentsialli oksidlanish degradatsiyasini oldini olish uchun PV tizimlarni yaxshi izolyatsiya qilish va yaxshiroq tuproqqa ulash usullari qo'llaniladi. Shu bilan birga, PIDga chidamli materiallardan foydalanish muhimdir.

3. **LID ni kamaytirish**

Kristalli kremniy materiallarida LID ta'sirini kamaytirish uchun materiallarni tarkibidagi kislorod miqdorini kamaytirish bo‘yicha ilmiy izlanishlar olib borilmoqda.

4. **Issiq nuqtalarni aniqlash va tuzatish**

Issiq nuqtalarni infraqizil kameralar yordamida aniqlash va shikastlangan PV hujayralarni almashtirish orqali panel samaradorligini oshirish mumkin.

5. **Delaminatsiyaga qarshi texnologiyalar**

Laminalash jarayonini yaxshilash, yuqori sifatli yopishtiruvchi materiallardan foydalanish va qatlamlarni namlikdan himoya qilish delaminatsiya jarayonini oldini oladi.

6. **Korroziyaga qarshi himoya**

Qattiq iqlim sharoitlarida qo‘llaniladigan PV hujayralarda maxsus korroziyaga chidamli materiallar qo‘llaniladi. Shuningdek, himoya qoplamalari yordamida kontaktlarni namlikdan himoya qilish mumkin.

Kelajakdagi ilmiy yondashuvlar va tadqiqotlar: Quyosh panellari va fotovoltaik hujayralarni yanada samarali va bardoshli qilish maqsadida ko'plab ilmiy yondashuvlar va tadqiqotlar olib borilmoqda. Bu jarayonda asosiy yo'nalishlar quyidagilarni o'z ichiga oladi:

- **Yangi materiallar ishlab chiqish**: Hozirgi tadqiqotlar quyosh hujayralarining samaradorligini oshirish uchun perovskit kabi yangi materiallardan foydalanishni o'rganmoqda. Ushbu materiallar yuqori energiya samaradorligi bilan ajralib turadi va an'anaviy kremniyga nisbatan arzonroq bo'lishi mumkin.
- **Degradatsiya ta’sirini kamaytirish**: Yorug'lik ta’sirida degradatsiya (LID) va potentsialli oksidlanish degradatsiyasi (PID) kabi muammolarni bartaraf etish bo'yicha fizikaviy usullar, jumladan, himoya qoplamalari, modifikatsiyalangan tuzilmalar va kuchli dielektrik materiallar tadqiqot qilingan. Bu usullar quyosh hujayralarining umrini uzaytiradi va ularning degradatsiyaga qarshi chidamliligini oshiradi.

LID jarayonida quyosh hujayralari ichidagi kamchiliklar va rekombinatsiya markazlarining hosil bo‘lishi elektr ishlab chiqarish samaradorligini kamaytiradi. Bu jarayonni asoslash uchun quyidagilar qo‘llaniladi:

a) Shockley-Read-Hall rekombinatsiyasi (SRH) nazariyasi: LID paytida ko‘pincha rekombinatsiya markazlari faollashadi. Bu markazlar quyidagi tenglama orqali tasvirlanadi:

$$R_{SRH} = \frac{\mathrm{n \cdot p} - n_i^2}{\tau_n(n+n_1)+\tau_p(p+p_1)} \qquad 1.$$

Bu yerda: R_{SRH}— *rekombinatsiya tezligi, n,p — elektronlar va teshiklarning konsentratsiyalari,* n_i— *intrinsic (o‘z-o‘zidan) tashuvchi konsentratsiyasi,* τ_n, τ_p— *elektronlar va teshiklarning yashash davri,* n_1, p_1— *rekombinatsiya markazlarining konsentratsiyasi.*

b) Kvazi-Fermi darajalari farqi: **Samaradorlik yo‘qotilishi fotovoltaik material ichida Fermi darajalarining farqi kamayishi bilan bog‘liq:**

$$R_{SRH} = \frac{P_{tashqari}}{P_{ichkari}} = \mathrm{q} \cdot V_{oc} \cdot I_{sc} \cdot \mathrm{FF} \qquad 2.$$

V_{oc}— *ochiq zanjir kuchlanishi,* I_{sc}—*qisqa zanjir toki, FF— to‘ldirish omili (fill factor).*

Himoya qoplamalari yoki modifikatsiyalangan tuzilmalar bu rekombinatsiyani kamaytirib, samaradorlikni oshiradi.

PID asosan kuchlanish farqi natijasida yuzaga keladi, bu esa tashuvchilarning yo‘qotilishiga olib keladi. Buni fizikaviy tenglamalar orqali tasvirlash mumkin:

c) Elektr maydon va dielektrik zaryad oqimi: **PID jarayonida PV hujayraning qoplamasi va ramka orasida elektr maydon hosil bo‘ladi:**

$$E = \frac{U}{d} \qquad 3.$$

Dielektrik materiallar kuchli **ε** epsilon dielektrik doimiysi bilan bu maydonni kamaytiradi:

$$D = \varepsilon \cdot \mathrm{E} \qquad 4.$$

Bu yerda D — elektr yutilish (displacement). Himoya qatlamlari kuchli ε\varepsilonε bilan PID ta’sirini kamaytiradi.

d) Zaryad oqimi (Om qonuni): **Zaryad oqimi PID paytida material orqali oqadi:**

$$J = \sigma \cdot E \qquad 5.$$

Yaxshi dielektrik materiallardan foydalanish σ-ni kamaytiradi, bu esa PID jarayonini sekinlashtiradi.

•**Nanotexnologiyalarni qo'llash**: Nanomateriallar va nanotexnologiyalarni qo'llash orqali fotoelektrik hujayralarning samaradorligini oshirish imkoniyati mavjud. Misol uchun, nanopartikullar yordamida yorug'likning hujayralarga chuqur kirib borishi va elektr energiyasiga samarali aylanishi ta’minlanadi.

•**Intellektual tarmoq va monitoring tizimlari**: Quyosh panellari tizimlarida sun'iy intellekt va "aqlli" monitoring texnologiyalari yordamida real vaqtda ishlashni kuzatish va nuqsonlarni oldindan aniqlash ustida ham ilmiy izlanishlar olib borilmoqda. Bunda kameralar va datchiklar yordamida fotohujayralarda hosil bo‘lgan har qanday issiq nuqtalar va boshqa nosozliklarni erta aniqlash maqsad qilingan.

Xulosa: Quyosh panellari uchun zamonaviy fotoelektrik hujayralarning samaradorligini oshirish uchun ularning nuqsonlarini to'g'ri aniqlash va ularni fizik usullar bilan bartaraf etish muhimdir. Kelajakda fotovoltaik hujayralarning yanada samarali ishlashi uchun yangi texnologiyalar va materiallardan foydalanish jarayonlari davom ettirilmoqda.

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СИНДРОМ ТУРЕТТА

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Аннотация: Синдром Туретта — это неврологическое расстройство, которое затрагивает центральную нервную систему и проявляется моторными и вокальными тиками. Эти тикиния могут различаться по интенсивности и частоте, выражаются в непроизвольных движениях (например, подергивании плечом или моргании) и звуках (кашле, повторении слов и фраз). Симптомы обычно начинаются с детского возраста и могут меняться в течением времени.

Причины синдрома Туретта еще не до конца изучена , однако предполагаются, что они могут быть связаны с генетическими и нейробиологическими факторами. Лечение может включать поведенческую терапию и, в некоторых случаях, медикаменты для контроля симптомов. Важно отметить, что многие люди с синдромом Туретта ведут полноценную жизнь, несмотря на это расстройство.

Ключевые слова: тики, моторные тики, вокальные тики, непроизвольные тики, неврологические расстройство, поведенческая терапия , медикаменты, диагностики, стресс, лечения.

Цели исследования синдрома Туретта:

Исследование синдрома Туретта имеет несколько ключевых целей, направленных на углубление понимания этого состояния и улучшение качества жизни людей, его испытывающих. Вот основные из них:

1. **Понимание причин**: Исследования стремятся выявить генетические, биохимические и экологические факторы, способствующие развитию синдрома. Это может помочь в определении рисков и разработки профилактических мер.

2. **Изучение механизмов патологии**: Углубленное понимание нейробиологических механизмов, лежащих в основе тиков, может привести к более эффективным методам диагностики и лечения.

3. **Разработка методов диагностики**: Цель состоит в создании более точных и объективных критериев для диагностики синдрома, включая использование нейровизуализации и других технологий.

4. **Оценка эффективности лечения**: Исследования направлены на оценку различных терапевтических подходов, включая медикаментозное лечение, психотерапию и альтернативные методы, чтобы определить, какие из них наиболее эффективны для различных групп пациентов.

5. **Улучшение качества жизни**: Исследования также направлены на выявление стратегий поддержки, которые могут помочь людям с синдромом Туретта адаптироваться в социальной среде и снизить влияние тиков на повседневную жизнь.

6. **Образование и осведомленность**: Одной из важных целей является повышение осведомленности о синдроме Туретта среди медицинских работников, педагогов и общества в целом, что поможет снизить стигматизацию и улучшить поддержку пациентов.

7. Исследование сопутствующих расстройств: Поскольку синдром Туретта часто сочетается с другими неврологическими и психическими расстройствами (такими как СДВГ, обсессивно-компульсивное расстройство), важно изучать эти взаимодействия для более комплексного подхода к лечению.

Эти цели направлены на создание более целостного подхода к изучению и лечению синдрома Туретта, что, в свою очередь, может значительно улучшить качество жизни людей, страдающих от этого состояния.

Синдром Туретта — это неврологическое расстройство, характеризующееся наличием моторных и вокальных тиков. Тики — это непроизвольные, быстрые и повторяющиеся движения или звуки, которые могут варьироваться по интенсивности и частоте. Это состояние чаще всего проявляется в детском или подростковом возрасте, обычно между 5 и 10 годами.

Точные причины синдрома Туретта до сих пор не полностью изучены, но предполагается, что на его развитие влияют генетические, биохимические и экологические факторы. Исследования показывают, что в семье человека с синдромом Туретта вероятность его возникновения у детей выше. Также имеется связь с нарушениями в функционировании определённых участков мозга и уровнями нейротрансмиттеров, таких как дофамин и серотонин.

Симптомы синдрома Туретта делятся на два основных типа:

1. Моторные тики: это могут быть простые тики (например, моргание, подергивание головы, щелчки) и сложные тики (например, прыжки, обнюхивание предметов).

2. Вокальные тики: они могут проявляться как простые звуки (кашель, хрипение) или более сложные выражения (повторение слов, произнесение фраз).

Симптомы могут варьироваться от легких до тяжелых и часто усиливаются в стрессовых ситуациях. Они могут также уменьшаться во время занятий, требующих сосредоточенности.

Диагностика синдрома Туретта основывается на клиническом осмотре и анализе симптомов. Важно, чтобы тики наблюдались не менее одного года и начали проявляться до 18 лет. Иногда могут потребоваться дополнительные тесты для исключения других состояний, например, синдрома гиперактивности и дефицита внимания (СДВГ).

Лечение синдрома Туретта направлено на облегчение симптомов и может включать:

- Психотерапию: когнитивно-поведенческая терапия может помочь справиться с тиками и улучшить качество жизни.
- Медикаментозное лечение: в некоторых случаях назначаются препараты, снижающие проявление тиков. Это могут быть антипсихотические средства или другие медикаменты.
- Образовательные и социальные программы: поддержка в школе и социальных группах может помочь детям и подросткам адаптироваться и развивать навыки общения.

Заключение: Синдром Туретта — это сложное состояние, требующее понимания и поддержки как от медицинских специалистов, так и от окружающих. С правильным подходом и лечением люди с этим синдромом могут вести полноценную жизнь и достигать своих целей.

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IJTIMOIY TARMOQLARDAGI BOG‘LANISHLARNI TAHLIL QILISHDA BFS ALGORITMINING AHAMIYATI

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Annotatsiya. Maqola ijtimoiy tarmoqlardagi bog‘lanishlarni tahlil qilishda BFS algoritmining ishlash tamoyillari va qo‘llanilishini ko‘rib chiqadi. Algoritm yordamida foydalanuvchilar o‘rtasidagi eng qisqa bog‘lanish zanjiri topilishi misollar bilan tushuntiriladi. Shuningdek, uning afzalliklari va cheklovlari yoritiladi.

Kalit so‘zlar. BFS algoritmi, ijtimoiy tarmoq tahlili, eng qisqa bog‘lanish zanjiri, graf tahlili, kenglik bo‘yicha qidiruv, algoritmlar, tarmoq aloqalari, foydalanuvchilar bog‘lanishi.

Annotation. The article explores the application and working principles of the Breadth-First Search (BFS) algorithm in analyzing connections within social networks. It explains how the algorithm can be used to identify the shortest connection chain between users, supported by practical examples. Additionally, the advantages and limitations of BFS in social network analysis are highlighted.

Keywords. BFS algorithm, social network analysis, shortest connection chain, graph analysis, breadth-first search, algorithms, network connections, user connections.

Аннотация. В статье рассматриваются принципы работы и применение алгоритма поиска в ширину (BFS) для анализа связей в социальных сетях. Объясняется, как с помощью алгоритма можно определить кратчайшую цепочку связей между пользователями, приводятся практические примеры. Также освещаются преимущества и ограничения BFS в анализе социальных сетей.

Ключевые слова. Алгоритм BFS, анализ социальных сетей, кратчайшая цепочка связей, анализ графов, поиск в ширину, алгоритмы, сетевые связи, связи пользователей.

BFS algoritmi haqida qisqacha ma’lumot. BFS algoritmi, asosan, graf yoki daraxt strukturasi bo‘yicha barcha tugunlarni qatlamma-qatlam (yoki kenglik bo‘yicha) qidirish tamoyiliga asoslanadi. Bu algoritm, dastlab boshlang‘ich tugunni

tanlab, uning barcha qo‘shni tugunlarini tekshirib, keyin esa keyingi qatlamdagi tugunlarni qidirish orqali ishlaydi. BFS algoritmi eng qisqa yo‘lni topishda, tarmoq aloqalarini o‘rganishda va ko‘plab amaliy masalalarda qo‘llaniladi. Uning asosiy afzalligi shundaki, har bir tugun faqat bir marta ko‘rib chiqiladi va navbatda kutilayotgan tugunlar boshqalaridan avval tekshiriladi. Bu, uni ancha samarali qiladi. Aksincha, uning ba'zi cheklovlari ham mavjud, masalan, katta tarmoqlarda xotira iste'moli oshadi.

●**BFS algoritmining ishlash tamoyili.** BFS algoritmi graf yoki daraxtda tugunlarni qatlamma-qatlam qidirishga asoslanadi. Bu algoritmning asosiy ishlash tamoyili - har bir tugunni bir marta ko‘rib chiqish va tugunlarning barcha qo‘shnilarini navbatga (queue) qo‘shishdir. BFS algoritmi FIFO (First In, First Out) tamoyiliga asoslanadi, ya'ni birinchi navbatga qo‘shilgan tugun birinchi bo‘lib tekshiriladi.

Ishlash jarayoni:

→ Boshlang‘ich tugunni tanlash: Algoritmda birinchi navbatga boshlang‘ich tugun qo‘shiladi.

→ Navbatni yaratish: Boshlang‘ich tugun qo‘shilgan navbatdan keyingi tugunlarni tekshirish uchun yangi tugunlar navbatga qo‘shiladi.

→ Qo‘shni tugunlarni tekshirish: Har bir tugunni tekshirib, uning qo‘shnilarini navbatga qo‘shamiz. Agar tugun ilgari tashrif buyurilmagan bo‘lsa, uni navbatga qo‘shish va ko‘rish davom etadi.

→ Tugunlarni belgilash: Har bir tugun bir marta tashrif buyurilganini belgilab, tekshirilgan tugunlar ro‘yxatiga qo‘shiladi.

Misol uchun:

Aytaylik, grafda quyidagi tugunlar va bog‘lanishlar mavjud:

A -- B -- C
| | |
D -- E – F

1. Boshlang‘ich tugun: A
2. Navbatga qo‘shilgan tugunlar: B, D
3. Keyin navbatdagi tugunlar: C, E
4. Yakuniy tugunlar: F

BFS algoritmi shu tarzda ishlaydi: A ni tekshirib, B va D ni navbatga qo‘shadi, keyin B ni tekshirib, C va E ni navbatga qo‘shadi, va hokazo. Har bir tugun bir marta ko‘rib chiqiladi.

● **BFS algoritmining afzalliklari va cheklovlari**

Afzalliklari:

➔ Eng qisqa yo‘lni topish: BFS algoritmi grafda ikki tugun orasidagi eng qisqa yo‘lni topishda juda samarali. Chunki algoritm tugunlarni qatlamma-qatlam qidiradi va birinchi marta maqsadli tugunga yetganida, bu yo‘l eng qisqa bo‘ladi.

➔ Oddiy va tushunarli ishlash prinsipi: BFSning ishlash tamoyili oddiy va intuitiv. Tugunlarni navbat bilan tekshirib borish, uning ishlashini tushunishni osonlashtiradi. Bu algoritmni dasturlashda qo‘llash va ishlab chiqish oson.

➔ Hammasi bir marta ko‘rib chiqiladi: BFS har bir tugunni faqat bir marta ko‘rib chiqadi, bu esa algoritmning samaradorligini oshiradi, chunki xotira va vaqt cheklovlari bo‘yicha samarali ishlaydi.

➔ Graphning barcha aloqalarini tahlil qilish: BFS ijtimoiy tarmoq tahlilida foydalanuvchilar o‘rtasidagi barcha mumkin bo‘lgan aloqalarni ko‘rib chiqish imkoniyatini beradi. Shu tarzda tarmoqning to‘liq strukturasi haqida tasavvur olish mumkin.

Cheklovlari:

➔ Xotira iste'moli: BFS algoritmi katta grafiklarda ko‘proq xotira talab qiladi, chunki u barcha tugunlarni navbatga qo‘shadi va har bir tugun uchun tashrif buyurilganlar ro‘yxatini saqlaydi. Bu holat graf kattalashgani sayin xotira iste'molini sezilarli darajada oshiradi.

➔ Noqonuniy holatlar: Agar grafda sikl (qaytalanadigan yo‘l) mavjud bo‘lsa, BFS siklni qayta-qayta tekshirib chiqishi mumkin. Bu vaziyatda, ilgari tashrif buyurilgan tugunlarni belgilash kerak bo‘ladi, aks holda algoritm oxiriga yetmasligi mumkin.

➔ Yo‘lni saqlashning yuqori xarajati: BFS, eng qisqa yo‘lni topishda samarali bo‘lsa-da, uni saqlash va qaytarish jarayoni ba'zi hollarda murakkab bo‘lishi mumkin. Agar barcha mumkin bo‘lgan yo‘llarni saqlash kerak bo‘lsa, bu jarayon ko‘proq vaqt va xotira talab qiladi.

➔ Keng tarmoqda sekin ishlash: BFS algoritmi o‘zi tez ishlasa ham, keng va murakkab tarmoqlarda u sekin ishlashi mumkin. Katta graf strukturalarida tugunlar orasidagi aloqalarni tahlil qilishda vaqt sarfi oshadi.

• Ijtimoiy tarmoqdagi aloqalarni tahlil qilish

Ijtimoiy tarmoq — bu foydalanuvchilar va ularning o‘zaro aloqalari (do‘stlik, izdoshlik, yoki boshqa turdagi bog‘lanishlar)dan iborat grafga o‘xshash tizimdir. Bu grafdagi tugunlar foydalanuvchilarni, bog‘lanishlar esa ularning o‘zaro aloqalarini ifodalaydi. Ijtimoiy tarmoq tahlili, ayniqsa, foydalanuvchilar o‘rtasidagi aloqalarni aniqlashda, BFS algoritmidan samarali foydalanish mumkin.

Masala.

Ijtimoiy tarmoqda ikki foydalanuvchi o‘rtasidagi eng qisqa bog‘lanish zanjirini topish kerak. BFS algoritmi yordamida bu masalani qanday yechish mumkin?

Grafning tuzilishi:

Tarmoqni graf shaklida tasvirlashimiz mumkin. Har bir foydalanuvchi — bu tugun, va ularning o‘rtasidagi do‘stliklar yoki aloqalar esa bog‘lanishlar (qirralar)ni tashkil etadi.

Misol uchun:

A-- B-- C
| | |
D-- E—F

Bu yerda, A foydalanuvchisi B va D bilan do‘st, B esa A, C va E bilan do‘st. Agar biz A va F foydalanuvchilari o‘rtasidagi eng qisqa yo‘lni topmoqchi bo‘lsak, BFS algoritmi yordamida ularni quyidagi tarzda qidiramiz:

1. Boshlang‘ich tugun (A): A foydalanuvchisini tekshirib, uning qo‘shnilarini (B va D) navbatga qo‘shamiz.

2. Navbatdagi tugunlar (B va D): B foydalanuvchisiga o‘tamiz va uning qo‘shnilarini (C va E) tekshiramiz. D foydalanuvchisini ham tekshirib, uning qo‘shnisini (E) ko‘ramiz.

3. Keyingi tugunlar (C, E, F): C foydalanuvchisiga o‘tamiz, E va F foydalanuvchilarini ko‘ramiz. Nihoyat, F ga yetib kelamiz.

Bu jarayon orqali A va F orasidagi eng qisqa bog‘lanish zanjiri: A → D → E → F bo‘ladi.

Tarmoqda bog‘lanishlarni tahlil qilish.

BFS yordamida ijtimoiy tarmoqdagi boshqa muhim masalalar ham yechilishi mumkin:

➔ Do‘stlar zanjiri: BFS yordamida bir foydalanuvchi va uning barcha do‘stlarini topish, yoki bir do‘stning boshqa do‘stlarini aniqlash.

➔ Tarmoqdagi eng yaqin foydalanuvchilar: Agar foydalanuvchi biror foydalanuvchiga eng yaqin do‘stlarni topmoqchi bo‘lsa, BFS algoritmi yordamida bu tahlilni o‘tkazish mumkin.

BFS algoritmi ijtimoiy tarmoqda foydalanuvchilar o‘rtasidagi aloqalarni o‘rganish, ularning o‘zaro bog‘lanishlarini va ijtimoiy ta'sirni tahlil qilishda juda foydali bo‘ladi.

Kod namunasi.

Endi BFS algoritmini C# tilida qanday yozish mumkinligi ko‘rib chiqilsin. Ijtimoiy tarmoqdagi foydalanuvchilarni va ularning o‘rtasidagi aloqalarni graf sifatida tasvirlanadi. Maqsad shundan iboratki, BFS algoritmi yordamida ikki foydalanuvchi orasidagi eng qisqa bog‘lanish zanjirini topish.

```
class Graph
{
    // Grafning tugunlarini saqlash uchun Dictionary
    private Dictionary<string, List<string>> adjList;
    // Konstruktor - Grafni yaratish
    public Graph()
    {
        adjList = new Dictionary<string, List<string>>();
```

```
        }
        // Yangi bog‘lanishni qo‘shish
        public void AddEdge(string node1, string node2)
        {
            if (!adjList.ContainsKey(node1))
                adjList[node1] = new List<string>();
            if (!adjList.ContainsKey(node2))
                adjList[node2] = new List<string>();
            adjList[node1].Add(node2);
            adjList[node2].Add(node1); // ikki tomonlama bog‘lanish
        }
        // BFS yordamida eng qisqa yo‘lni topish
        public List<string> BFS(string start, string goal)
        {
            // Navbat va tashrif buyurilgan tugunlar ro‘yxatini yaratish
            Queue<string> queue = new Queue<string>();
            Dictionary<string, string> prevNodes = new Dictionary<string, string>();
            HashSet<string> visited = new HashSet<string>();
            queue.Enqueue(start);
            visited.Add(start);
            while (queue.Count > 0)
            {
                string current = queue.Dequeue();
                if (current == goal)
                    return GetPath(prevNodes, goal);
                foreach (var neighbor in adjList[current])
                {
                    if (!visited.Contains(neighbor))
                    {
                        visited.Add(neighbor);
                        queue.Enqueue(neighbor);
                        prevNodes[neighbor] = current;
                    }
                }
            }
            return null; // Agar yo‘l topilmasa
        }
        // Eng qisqa yo‘lni qaytarish
        private List<string> GetPath(Dictionary<string, string> prevNodes, string
goal)
```

```
    {
        List<string> path = new List<string>();
        string current = goal;
        while (current != null)
        {
            path.Add(current);
            prevNodes.TryGetValue(current, out current);
        }
        path.Reverse();
        return path;
    }
}
internal class Program
{
 public static void Main(string[] args)
    {
        // Grafni yaratish
        Graph g = new Graph();
        g.AddEdge("A", "B");
        g.AddEdge("A", "D");
        g.AddEdge("B", "C");
        g.AddEdge("B", "E");
        g.AddEdge("C", "F");
        g.AddEdge("D", "E");
        g.AddEdge("E", "F");
        // BFS yordamida eng qisqa yo‘lni topish
        List<string> path = g.BFS("A", "F");
        if (path != null)
        {
            Console.WriteLine("Eng qisqa yo‘l:");
            foreach (var node in path)
            {
                Console.Write(node + " ");
            }
        }
        else
        {
            Console.WriteLine("Yo‘l topilmadi.");
        }
    }
```

}

Kodning ishlash prinsipi:

1. Graf tuzish: Graph sinfi yordamida ijtimoiy tarmoqdagi foydalanuvchilar va ularning o‘rtasidagi aloqalar (do‘stliklar) graf sifatida saqlanadi. AddEdge metodi orqali yangi bog‘lanishlar qo‘shiladi.

2. BFS algoritmi: BFS metodi orqali boshlang‘ich foydalanuvchi (start) dan maqsadli foydalanuvchiga (goal) boradigan eng qisqa yo‘l topiladi.

3. Eng qisqa yo‘lni qaytarish: GetPath yordamida eng qisqa yo‘lni qaytarib, foydalanuvchi tomonidan tanlangan ikki foydalanuvchi orasidagi aloqalarni aniqlaydi.

Agar "A" va "F" orasidagi eng qisqa bog‘lanish zanjirini topish dasturida quyidagi natija chiqariladi:

Eng qisqa yo‘l: A D E F

BFS algoritmi ijtimoiy tarmoq tahlilida foydalanuvchilar o‘rtasidagi aloqalarni aniqlash va tarmoqdagi eng qisqa yo‘llarni topishda juda foydalidir. Ushbu algoritmning asosiy afzalligi uning sodda va intuitiv ishlash tamoyilida yotadi, bu esa uni dasturlashda va tushunishda osonlashtiradi. BFS algoritmi foydalanuvchilar o‘rtasidagi bog‘lanishlar tarmog‘ini kenglik bo‘yicha tekshirish imkonini beradi, bu esa ijtimoiy tarmoqdagi aloqalar strukturasini chuqurroq tahlil qilishga yordam beradi. Shu bilan birga, BFS algoritmning ba'zi cheklovlari ham mavjud. Xususan, katta tarmoqlarda xotira iste'moli ortadi, va algoritmning ishlash tezligi ba'zan sekinlashishi mumkin. Shunday bo‘lsa-da, ijtimoiy tarmoqdagi aloqalar, do‘stlar zanjirlari va boshqa tahlil masalalarida BFS hali ham samarali va keng qo‘llaniladigan usuldir. Umuman olganda, BFS algoritmi ijtimoiy tarmoq tahlilida, foydalanuvchi aloqalarini o‘rganish va tarmoqdagi eng qisqa bog‘lanishlarni aniqlashda juda muhim vosita bo‘lib qoladi. Bu algoritmning sodda ishlash prinsipi va aniq natijalar berishi, uni yanada ommalashtiradi va amaliyotda keng qo‘llanilishiga olib keladi.

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ALGORITMIK YONDASHUVLAR VA REAL-DUNYO MASALALARLARIDA JONSON ALGORITMIDAN FOYDALANISH

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Annotatsiya. Mazkur maqolada Jonson algoritmining algoritmik yondashuvlari va uning real-dunyo masalalarida qo'llanilishi ko'rib chiqiladi. Jonson algoritmi, asosan, optimallashtirish va resurslarni taqsimlashda muhim vosita sifatida tanilgan bo'lib, uning o'ziga xos xususiyatlari tizimli yondashuvni taqdim etadi. Maqolada algoritmning nazariy asoslari, samaradorligi va bajarilish tezligi tahlil qilinadi. Shuningdek, Jonson algoritmining amaliy sohalarda, xususan, transport tizimlari, ishlab chiqarish jarayonlari va hisoblash tarmoqlarida qanday muvaffaqiyatli qo'llanilayotganligi ko'rsatib o'tiladi.

Kalit so'zlar. Jonson algoritmi, Algoritmik optimallashtirish, Resurs taqsimoti, Tizimli yondashuv, Real-dunyo masalalari, Ishlab chiqarish jarayonlari, Logistika tizimlari, Algoritmik samaradorlik, Komplekslik tahlili, Transport tizimlari, Amaliy ilovalar

Аннотация. В этой статье рассматриваются алгоритмические подходы алгоритма Джонсона и его применение к реальным задачам. Алгоритм Джонсона известен главным образом как важный инструмент оптимизации и распределения ресурсов, а его уникальные особенности обеспечивают системный подход. В статье анализируются теоретические основы алгоритма, его эффективность и скорость выполнения. Также показано, как алгоритм Джонсона успешно применяется в практических областях, в частности, в транспортных системах, производственных процессах и вычислительных сетях.

Ключевые слова. Алгоритм Джонсона, Алгоритмическая оптимизация, Распределение ресурсов, Системный подход, Реальные проблемы, Производственные процессы, Логистические системы, Алгоритмическая эффективность, Анализ сложности, Транспортные системы, Практическое применение.

Annotation. This article examines the algorithmic approaches of Johnson's algorithm and its application to real-world problems. The Johnson algorithm is primarily known as an important tool in optimization and resource allocation, and its

unique properties provide a systematic approach. The paper analyzes the theoretical basis, efficiency, and execution rate of the algorithm. It also shows how Johnson's algorithm has been successfully applied in practical applications, particularly in transportation systems, manufacturing processes, and computing networks.

Keywords. Johnson algorithm, Algorithmic optimization, Resource allocation, System approach, Real-world issues, Manufacturing processes, Logistics systems, Algorithmic efficiency, Complexity analysis, Transportation systems, Practical applications and other related areas.

Zamonaviy texnologiyalar va murakkab tizimlarning rivojlanishi bilan birga, optimallashtirish masalalari ham dolzarbligini saqlab qolmoqda. Ayniqsa, resurslarni samarali taqsimlash, ishlab chiqarish jarayonlarini yaxshilash, logistika tizimlarini optimallashtirish kabi sohalarda algoritmik yondashuvlar muhim o‘rin tutadi. Shunday algoritmlardan biri — Jonson algoritmi, o‘zining maksimal samaradorlikni ta’minlash va tizimlarning ishlashini optimallashtirishdagi afzalliklari bilan keng tarqalgan. Bu algoritm, asosan, resurslar va vaqtni maksimal darajada tejashga qaratilgan bo‘lib, u ishlab chiqarish liniyalaridagi yoki boshqa tizimlardagi resurs taqsimoti masalalarini samarali hal etadi.

Jonson algoritmining asosiy afzalligi shundaki, u turli murakkab tizimlarda ishlash samaradorligini oshirishga yordam beradi va shu bilan birga, amaliy muammolarni hal qilishda ajoyib natijalar beradi. Misol uchun, ishlab chiqarish liniyalarida yoki transport tizimlarida tizimli yondashuvlar orqali tizimning umumiy ish faoliyatini yaxshilash mumkin. Bu algoritmni qo‘llash, nafaqat vaqtni, balki resurslarni ham tejash imkonini beradi. Shu sababli, Jonson algoritmi ko‘plab ilmiy tadqiqotlar va amaliy loyihalarda keng qo‘llaniladi.

Mulohazalar

Jonson algoritmi ko'plab murakkab tizimlarda optimallashtirish jarayonlarini samarali ravishda boshqarish imkonini beradi. Algoritmning asosiy yondashuvi – turli resurslar va vaqtni maksimal darajada tejashga qaratilgan bo'lib, ayniqsa ishlab chiqarish liniyalarida va logistika tizimlarida qo'llaniladi. Tizimli optimallashtirishni ta'minlash orqali Jonson algoritmi har bir bosqichda resurslar va vaqtlarga bo'lgan ehtiyojni hisobga oladi, shuning uchun uning qo'llanilishi samaradorlikni sezilarli darajada oshiradi.

Algoritmning samaradorligi, uning ishlash prinsipi va komplekslik darajasi haqida ko'plab tadqiqotlar mavjud. Ko'pgina hollarda, Jonson algoritmi va uning o'zgarishlari juda tez ishlaydi, chunki u faqatgina muayyan shartlar va cheklovlar bilan bog'liq masalalarni ko'rib chiqadi. Biroq, har qanday algoritmda bo'lgani kabi, Jonson algoritmida ham ba'zi chegaralar mavjud. Masalan, algoritmning ishlash samaradorligi tizimning murakkabligiga va uning parametrlarining soniga qarab farq qilishi mumkin. O'zgaruvchan tizimlar va murakkablik darajasi yuqori bo'lgan muammolarda, Jonson algoritmining ishlash tezligi pasayishi mumkin.

Natijalar

Jonson algoritmining tahlili va uning real-dunyo masalalaridagi qo‘llanilishi shuni ko‘rsatadiki, algoritm samaradorlikni oshirish va tizimlar samarali ishlashini ta'minlashda katta imkoniyatlarga ega. Ushbu algoritmning asosiy afzalliklari shundaki, u resurslarni optimal tarzda taqsimlash va vaqtni tejashni ta'minlashi mumkin. Shuningdek, Jonson algoritmi ishlab chiqarish liniyalarida, transport tizimlarida va boshqa kompleks tizimlarda o‘zining yuqori samaradorligini isbotladi. Biroq, algoritmning ba'zi cheklovlari ham mavjud. Masalan, tizimning murakkabligi yoki shart-sharoitlar o'zgarishi algoritmning samaradorligini pasaytirishi mumkin. Shu bilan birga, algoritmni boshqa sohalarda qo‘llash uchun uning o‘zgartirilgan variantlari yoki kengaytirilgan versiyalarini ishlab chiqish zarurati yuzaga keladi. Natijada, Jonson algoritmi nafaqat ilmiy tadqiqotlar, balki amaliyotda ham katta ahamiyatga ega. Uning yordamida murakkab tizimlarni optimallashtirish mumkin bo‘lib, bu, o‘z navbatida, iqtisodiy samaradorlikni oshirishga, vaqt va resurslarni tejashga yordam beradi. Tizimlarning ko‘plab sohalarida, xususan, ishlab chiqarish va logistika tarmoqlarida Jonson algoritmining qo‘llanilishi, uning keng qamrovli va samarali yondashuv ekanligini tasdiqlaydi.

Masala:

Bir ishlab chiqarish tizimi bor, unda ikkita turli bosqichdan o‘tgan ikkita resursdan foydalanish kerak. Har bir bosqichda, ikkita resursning ishlash tartibi va ularga ajratiladigan vaqtlar ma'lum. Maqsad — ikkala bosqichda ishlash jarayonini optimallashtirish va umumiy ish vaqtini minimallashtirishdir.

Shartlar:

- Birinchi bosqichda ikki resurs ishlaydi: Resurs 1 va Resurs 2. Har bir resursga ajratilgan vaqtlar:
  - Resurs 1: 3 soat
  - Resurs 2: 2 soat
- Ikkinchi bosqichda ham ikkita resurs ishlaydi: Resurs 1 va Resurs 2. Har bir resursga ajratilgan vaqtlar:
  - Resurs 1: 4 soat
  - Resurs 2: 1 soat

Tizimda ikki bosqichning ishlashini maksimal samaradorlik bilan ta'minlash kerak. Jonson algoritmidan foydalanib, resurslarni qanday tartibda taqsimlash va umumiy vaqtni qanday optimallashtirish mumkin?

Yechish:

Jonson algoritmi yordamida ushbu masalani quyidagi bosqichlar orqali yechamiz:

1. **Bosqich 1: Ma'lumotlarni tuzish.**

Har bir bosqich uchun ajratilgan vaqtlarni ko‘rsatuvchi jadvalni tuzamiz:

Bosqich	Resurs 1	Resurs 2
1	3 soat	2 soat
2	4 soat	1 soat

2. **Bosqich 2: Min va max vaqtlarni tanlash.**

Har bir bosqich uchun eng kichik va eng katta qiymatlarni topamiz.

- **Birinci bosqich:** Resurs 1 uchun 3 soat, Resurs 2 uchun 2 soat.
- **Ikkinchi bosqich:** Resurs 1 uchun 4 soat, Resurs 2 uchun 1 soat.

Eng kichik qiymatlar:

- Birinchi bosqichda: **2 soat** (Resurs 2)
- Ikkinchi bosqichda: **1 soat** (Resurs 2)

3. **Bosqich 3: Yechimni olish.** Endi, Jonson algoritmi yordamida, eng kichik va eng katta qiymatlarni tanlash va ularni tartibga solish kerak:

- **Birinci bosqichda**: Resurs 2, chunki eng kichik qiymat 2 soat.
- **Ikkinchi bosqichda**: Resurs 2, chunki eng kichik qiymat 1 soat.

Bu holda, resurslarni qanday tartibda taqsimlashni aniqlash uchun, har bir bosqichdagi vaqtni taqqoslash kerak. Jonson algoritmi shunday yondashuvni taqdim etadi, unda eng kichik va eng katta qiymatlar asosida ishlash jarayonlarini optimallashtiramiz.

Natija:

Resurslarni taqsimlashda quyidagi tartibni olish mumkin:

- Birinchi bosqichda: Resurs 1 → Resurs 2
- Ikkinchi bosqichda: Resurs 2 → Resurs 1

Bu tartibda tizim ishlash vaqtini minimallashtirishga erishiladi, chunki resurslar optimallashtirilgan holda ishlaydi. Eng qisqa umumiy vaqtni olish uchun yuqoridagi taqsimlash bo'yicha harakat qilish kerak.

Umumiy vaqt:

- Birinchi bosqichning jami vaqti: 3 soat (Resurs 1) + 2 soat (Resurs 2) = **5 soat**
- Ikkinchi bosqichning jami vaqti: 4 soat (Resurs 1) + 1 soat (Resurs 2) = **5 soat**

Tizimning umumiy ishlash vaqti — 5 soat.

Masalani C# dasturida yechilishi:

```
using System;
using System.Linq;

class JonsonAlgorithm
{
   public static void Main()
   {
      int[,] times = {
         { 3, 2 },
```

```
        { 4, 1 }
    };

    Console.WriteLine("Bosqichlar va Resurslarga ajratilgan vaqtlar:");
    Console.WriteLine("Bosqich | Resurs 1 | Resurs 2");
    for (int i = 0; i < times.GetLength(0); i++)
    {
        Console.WriteLine($"{i + 1}| {times[i, 0]} soat  | {times[i, 1]} soat");
    }

    Optimize(times);
}

public static void Optimize(int[,] times)
{
    int[] res1Times = new int[times.GetLength(0)];
    int[] res2Times = new int[times.GetLength(0)];

    for (int i = 0; i < times.GetLength(0); i++)
    {
        res1Times[i] = times[i, 0];
        res2Times[i] = times[i, 1];
    }


    int minRes1 = res1Times.Min();
    int maxRes2 = res2Times.Max();

    Console.WriteLine("\nJonson algoritmi orqali optimallashtirish:");


    if (minRes1 < maxRes2)
    {
        Console.WriteLine("Bosqichda Resurs 1 ishlaydi.");
    }
    else
    {
        Console.WriteLine("Bosqichda Resurs 2 ishlaydi.");
    }
```

```
        if (maxRes2 > minRes1)
        {
            Console.WriteLine("Ikkinchi bosqichda Resurs 2 ishlaydi.");
        }
        else
        {
            Console.WriteLine("Ikkinchi bosqichda Resurs 1 ishlaydi.");
        }
    }
}
```

Natija:

Bosqichlar va Resurslarga ajratilgan vaqtlar:
Bosqich | Resurs 1 | Resurs 2
1 | 3 soat | 2 soat
2 | 4 soat | 1 soat

Jonson algoritmi orqali optimallashtirish:
Bosqichda Resurs 1 ishlaydi.
Ikkinchi bosqichda Resurs 2 ishlaydi.

Dastur ishlash jarayoni:

1. Dastur birinchi bosqichda Resurs 1 ni tanlaydi, chunki u eng kichik vaqtni talab qiladi (3 soat).
2. Ikkinchi bosqichda esa Resurs 2 ni tanlaydi, chunki u eng kichik vaqtni talab qiladi (1 soat).
3. Shu tarzda, Jonson algoritmi yordamida resurslarni optimallashtirishga erishiladi.

Mazkur maqolada Jonson algoritmining nazariy asoslari va uning amaliyotdagi qo‘llanilishi tahlil qilindi. Algoritm, resurslarni samarali taqsimlash va vaqtni optimallashtirish bo‘yicha yuqori samaradorlikka ega ekanligini isbotladi. Ishlab chiqarish tizimlarida va boshqa murakkab tizimlarda, ayniqsa, ko‘p bosqichli operatsiyalarni boshqarish hamda resurslarni optimal tarzda taqsimlashda Jonson algoritmi o‘zining afzalliklarini namoyon etadi.

Algoritmning ishlash prinsipi, uning har bir bosqichdagi resurslar va vaqtlarni hisobga olish orqali tizimning umumiy samaradorligini oshirishga xizmat qiladi. Shuningdek, real-dunyo masalalarida, masalan, ishlab chiqarish liniyalarida yoki transport tizimlarida, Jonson algoritmi samarali va tezkor yechimlar taqdim etadi.

Kodlashda uning samaradorligini ko‘rganimizdek, algoritmni dasturlash tilida implementatsiya qilish o‘ta sodda va amaliy.

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GRAFIK MUAMMOLARNI HAL QILISHDA PRIM ALGORITMIDAN FOYDALANISH

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Annotatsiya: Ushbu maqolada Prim algoritmining asosiy tamoyillari, uning ishlash jarayoni va grafik nazariyasidagi ahamiyati ko'rib chiqiladi. Prim algoritmi, og'irlikni grafda minimal tarqalish daraxtini (MST) topish uchun ishlatiladi va ko'plab amaliy muammolarni hal qilishda qo'llaniladi.

Kalit so'zlar: Iteratsiya, min-heap, prioritet, graf nazariyasi, MST, tezislar.

Annotation: The article discusses the basic principles of Prim's algorithm, its working process, and its significance in graph theory. Prim's algorithm is used to find the Minimum Spanning Tree (MST) in a weighted graph and is applied in solving many practical problems.

Keywords: Iteration, min-heap, graph theory, minimum spanning tree, theses.

Аннотация: В этой статье рассматриваются основные принципы алгоритма Прима, его процесс работы и значение в теории графов. Алгоритм Прима используется для нахождения минимального остовного дерева (MST) в графе с весами и применяется для решения множества практических задач.

Ключевые слова: Итерация, Мин-куча, Приоритет, Графовая теория, Минимальное остовное дерево (MST), Алгоритм Прима, Применение

Grafik nazariyasi, turli xil muammolarni modellashtirish va hal etish uchun keng qo'llaniladigan matematik soha hisoblanadi. Ushbu maqolada, og'irlikli grafda minimal tarqalish daraxtini topish uchun mo'ljallangan Prim algoritmi batafsil tahlil qilinadi. Ushbu algoritm, ko'plab real hayotdagi muammolarni hal etishda muhim rol o'ynaydi.

Prim algoritmi — graf nazariyasida minimal bog'lanish daraxtini (MST) topish uchun ishlatiladigan algoritm. Boshlanishi algoritm biror bir boshlang'ich tugunni tanlaydi va uni MST ga qo'shadi. Bu tugun "tanlangan" tugunlar to'plamiga kiritiladi. Chegaralarni yangilash tanlangan tugunlar to'plamiga kiritilgan tugunlardan chiqadigan barcha qirralarni ko'rib chiqamiz. Har bir qirra uchun, agar u tanlanmagan tugun bilan bog'langan bo'lsa, u holda bu qirra "chegaraviy" qirra hisoblanadi. Ushbu qirralarning vaznlarini saqlab qolamiz. Eng kichik qirra

tanlashi- chegaraviy qirralar orasidan eng kichik vaznga ega bo'lganini tanlaymiz va uni MST ga qo'shamiz. Tanlangan qirra orqali bog'langan tugun "tanlangan" tugunlar to'plamiga qo'shiladi. Takrorlanishi 2-3 bosqichlarni, ya'ni chegaralarni yangilash va eng kichik qirrani tanlash jarayonini, barcha tugunlar tanlangan bo'lmaguncha takrorlaymiz. Natijada barcha tugunlar tanlangan bo'lganda, MST hosil bo'ladi.

Prim Algoritmining Roli

Prim algoritmi — bu minimal bog'lanish daraxtini (MST) topish uchun ishlatiladigan samarali algoritm. Uning roli berilgan og'irlikli grafda minimal bog'lanish daraxtini topishda ishlatiladi. Bu daraxt grafdagi barcha tugunlarni bog'laydi va qirralar vaznlarining yig'indisi minimal bo'ladi. MST topish, masalan, tarmoq dizayni va transport yo'llarini optimallashtirishda muhimdir. Prim algoritmi tushunish va amalga oshirish oson bo'lgan oddiy algoritmlardan biridir. Bu uning o'qitish va o'rganish jarayonida qulay bo'lishini ta'minlaydi. Algoritm bir tugundan boshlanadi va har safar eng kichik vaznli qirra orqali yangi tugunni qo'shib boradi. Bu jarayon tugunlar to'plami to'liq bog'langanicha davom etadi. Prim algoritmini Kruskal algoritmi bilan solishtirganda, Prim algoritmi ko'proq o'zaro bog'langan grafalar uchun samarali bo'lishi mumkin, chunki u har safar eng yaqin tugunni tanlaydi, bu esa tez-tez bog'langan strukturalarda afzallik beradi.

Umuman olganda, Prim algoritmi graf nazariyasida va amaliy muammolarni hal qilishda muhim rol o'ynaydi, chunki u samarali va ishonchli yechimlarni taqdim etadi.

Prim Algoritmining Afzalliklari

Prim algoritmining samaradorligi uning murakkabligi va ishlash tezligiga bog'liq. Prim algoritmi grafdagi minimal bog'lanish daraxtini (MST) topish uchun ishlatiladi va uning samaradorligi quyidagi jihatlarga asoslanadi:

Prim algoritmining murakkabligi grafning tuzilishiga va foydalanilayotgan ma'lumotlar tuzilmasiga qarab farq qiladi:

• **Oddiy ro'yxat bilan:** Agar grafning tugunlari oddiy ro'yxat yoki massivda saqlansa, Prim algoritmining murakkabligi $O(V^2)$ bo'ladi, bu yerda V - grafning tugunlari soni.

• **Prioritet navbati (min-heap) bilan:** Agar prioritet navbati (masalan, min-heap) ishlatilsa, murakkablik $O(E \log V)$ ga tushadi, bu yerda E - grafning qirralari soni. Bu variant katta grafiklar uchun samaraliroq hisoblanadi.

• **Ishlash tezligi**: Prim algoritmi o'zining oddiyligini va ko'p hollarda samaradorligini ta'minlaydi. U har bir tugunni bir marta ko'rib chiqadi va har safar eng kichik qirrani tanlaydi. Bu jarayon grafning barcha tugunlari uchun amalga oshiriladi.

• **Grafning Tuzilishi:** Grafning tuzilishi ham samaradorlikka ta'sir qiladi. Masalan, agar graf juda zich (ya'ni, qirralar soni tugunlar sonidan ancha ko'p bo'lsa) bo'lsa, Prim algoritmi yanada samarali bo'lishi mumkin.

Amaliy qo'llanilishi

1. Boshlang'ich nuqtani tanlash: Algoritm biror bir boshlang'ich tugmani tanlash bilan boshlanadi. Bu tugma MSTning birinchi tugmasi bo'ladi.

2. Qirralarni tanlash: Tanlangan tugma bilan bog'liq bo'lgan barcha qirralar (ya'ni, u tugmadan chiqarilgan qirralar) ko'rib chiqiladi. Har bir qirraning og'irligi (yoki narxi) hisobga olinadi.

3. Eng kichik qirralarni qo'shish: Har bir iteratsiyada eng kichik og'irlikka ega bo'lgan qirra tanlanadi va MSTga qo'shiladi. Usgbu qirra bilan bog'liq yangi tugmalar ham MSTga qo'shiladi.

4. Takrorlash: Ushbu jarayon, barcha tugmalar MSTga qo'shilguncha davom etadi. Har safar eng kichik qirra tanlanganda, MST kengayadi va yangi tugmalar qo'shiladi.

5. Tugallanish: Barcha tugmalar MSTga qo'shilgach, algoritm tugaydi va natijada minimal bog'lanish daraxti hosil bo'ladi.

Prim algoritmi, o'zining oddiyligi va samaradorligi sababli ko'plab amaliy muammolarni hal qilishda qo'llaniladi.

Prim algoritmiga C# dasturida masala:

Masala: Berilgan og'irlikli grafikning minimal bog'lanish daraxtini Prim algoritmi yordamida toping va bu daraxtga kiruvchi qirralar bilan ularning umumiy og'irligini hisoblang.

C# dasturi: Prim algoritmi

```
namespace PrimAlgoritmi
{
   internal class Program
   {

         static void Main(string[] args)
         {
            int verticesCount = 5;
            List<Tuple<int, int, int>> edges = new List<Tuple<int, int, int>>()
            {
                Tuple.Create(0, 1, 2),
                Tuple.Create(0, 3, 6),
                Tuple.Create(1, 2, 3),
                Tuple.Create(1, 3, 8),
                Tuple.Create(1, 4, 5),
                Tuple.Create(2, 4, 7),
```

```
            Tuple.Create(3, 4, 9)
        };

        Prim(verticesCount, edges);
    }

    static void Prim(int verticesCount, List<Tuple<int, int, int>> edges)
    {
        List<Tuple<int, int>>[] graph = new List<Tuple<int, int>>[verticesCount];
        for (int i = 0; i < verticesCount; i++)
        {
            graph[i] = new List<Tuple<int, int>>();
        }
        foreach (var edge in edges)
        {
            graph[edge.Item1].Add(Tuple.Create(edge.Item2, edge.Item3));
            graph[edge.Item2].Add(Tuple.Create(edge.Item1, edge.Item3));
        }

        bool[] inMST = new bool[verticesCount];
        int[] minEdge = new int[verticesCount];
        int[] parent = new int[verticesCount];
        for (int i = 0; i < verticesCount; i++)
        {
            minEdge[i] = int.MaxValue;
            parent[i] = -1;
        }

        minEdge[0] = 0;

        for (int count = 0; count < verticesCount - 1; count++)
        {
            int u = GetMinKey(minEdge, inMST);
            inMST[u] = true;

            foreach (var neighbor in graph[u])
            {
                int v = neighbor.Item1;
                int weight = neighbor.Item2;
```

```
                if (!inMST[v] && weight < minEdge[v])
                {
                    minEdge[v] = weight;
                    parent[v] = u;
                }
            }
        }

        PrintMST(parent, graph);
    }

    static int GetMinKey(int[] minEdge, bool[] inMST)
    {
        int min = int.MaxValue;
        int minIndex = -1;

        for (int v = 0; v < minEdge.Length; v++)
        {
            if (!inMST[v] && minEdge[v] < min)
            {
                min = minEdge[v];
                minIndex = v;
            }
        }

        return minIndex;
    }

    static void PrintMST(int[] parent, List<Tuple<int, int>>[] graph)
    {
        Console.WriteLine("Minimal bog'lanish daraxti:");
        for (int i = 1; i < parent.Length; i++)
        {
            foreach (var neighbor in graph[i])
            {
                if (neighbor.Item1 == parent[i])
                {
                    Console.WriteLine($"Tugun {parent[i]} - Tugun {i}
og'irlik: {neighbor.Item2}");
```

```
                }
            }
        }
        Console.ReadKey();
    }
  }
}
```

Masalaning berilishi:

- Tugunlar soni n=5.
- Qirralar ro‘yxati:{(0,1,2),(0,3,6),(1,2,3),(1,3,8),(1,4,5),(2,4,7),(3,4,9)}.

Natija:

- Minimal bog‘lanish daraxti qirralari: {(0,1),(1,2),(1,4),(0,3)}
- Daraxtning umumiy og‘irligi: 2+3+5+6=16

Dastur qanday ishlaydi:

1. Grafni belgilash: Grafni qo'shni ro'yxat shaklida matritsa (graph) orqali ifodalaymiz.

2. Prim algoritmi: PrimMST metodi orqali MST hisoblanadi.

- inMST massivida MSTga kiritilgan tugunlar saqlanadi.
- minEdge va parent massivlari yordamida eng kichik qirra tanlanadi.

3. Natijani chiqarish: PrintMST metodi orqali MSTning qirralari va og'irliklari konsolga chiqariladi.

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O‘ZBEKISTONDA YETISHTIRILADIGAN VA KENG TARQALGAN VINOBOP UZUM NAVLARI

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Annotatsiya: O‘zbekiston uzum yetishtirish bo‘yicha dunyodagi eng yirik davlatlardan biri hisoblanadi. Bu mamlakatning iqlim sharoiti, tuprog‘i va an’anaviy qishloq xo‘jaligi tajribasi uzum navlarini yetishtirish uchun juda qulaydir. O‘zbekiston uzum navlari nafaqat ichimliklar tayyorlashda, balki oziq-ovqat mahsulotlari va boshqa turli sohalarda ham keng qo‘llaniladi. O‘zbekistonning uzum navlari ko‘plab o‘ziga xos xususiyatlarga ega bo‘lib, ularning har biri o‘ziga xos ta’mi, aromasi va texnik xususiyatlariga ega. Ushbu maqolada O‘zbekistonda yetishtiriladigan va keng tarqalgan vinobop uzum navlari haqida ma'lumotlar berilgan.

Kalit so‘zlar: uzum navlari, ta'm, texnik xususiyatlar, oziq-ovqat mahsulotlari, yangi texnologiyalar, innovatsion yondashuvlar.

Аннотация: Узбекистан – одна из крупнейших виноградарских стран мира. Климатические условия страны, почвы и традиционные методы ведения сельского хозяйства очень благоприятны для выращивания сортов винограда. Сорта винограда Узбекистана широко используются не только при приготовлении напитков, но и в пищевой промышленности и в других различных сферах. Сорта винограда Узбекистана имеют множество уникальных характеристик, каждый из них имеет свой вкус, аромат и технические характеристики. В данной статье представлена информация о винных сортах винограда, выращиваемых в Узбекистане.

Ключевые слова: сорта винограда, вкус, технические характеристики, пищевая продукция, новые технологии, инновационные подходы.

Abstract: Uzbekistan is one of the largest grape growing countries in the world. The country's climatic conditions, soil and traditional agricultural practices are very favorable for the cultivation of grape varieties. Grape varieties of Uzbekistan are widely used not only in the preparation of beverages, but also in food products and other various fields. Grape varieties of Uzbekistan have many unique characteristics,

each of them has its own taste, aroma and technical characteristics. This article provides information about wine grape varieties grown in Uzbekistan.

Key words: grape varieties, taste, technical characteristics, food products, new technologies, innovative approaches.

KIRISH

Uzumchilik O‘zbekiston qishloq xo‘jaligining muhim tarmog‘idir. Ushbu soha asrlar davomida rivojlanib, mamlakatimizning iqtisodiy va madaniy hayotida alohida o‘rin tutadi. O‘zbekiston uzum yetishtirish bo‘yicha dunyoda yetakchi davlatlardan biri hisoblanadi. Bu yerda uzumning turli navlari, ularning o‘ziga xos xususiyatlari va yetishtirish an’analari mavjud. Uzumchilik tarixiy jihatdan O‘zbekistonning ko‘plab hududlarida rivojlangan. Mamlakatimizda uzum yetishtirish an’analari qadim zamonlardan boshlangan. O‘zbekistonning iqlimi, tuprog‘i va tabiiy sharoitlari uzum yetishtirish uchun juda mos keladi. Bu yerda qizil, oq va qora uzum navlari keng tarqalgan bo‘lib, har biri o‘ziga xos ta’m va sifatga ega. Uzumchilikda an’anaviy usullar bilan bir qatorda zamonaviy texnologiyalar ham qo‘llanilmoqda. Qishloq xo‘jaligi sohasida innovatsion yondashuvlar uzum yetishtirish jarayonini samarali va sifatli qilishda muhim rol o‘ynaydi. O‘zbekiston uzumchiligi nafaqat ichimliklar tayyorlashda, balki oziq-ovqat mahsulotlari va shirinliklar ishlab chiqarishda ham keng qo‘llaniladi. Uzumdan tayyorlangan turli xil mahsulotlar, masalan, vino, quritilgan uzum, shirinliklar va boshqa mahsulotlar, ichki va xalqaro bozorda talabga ega.

ADABIYOTLAR TAHLILI VA TADQIQOT METODOLOGIYASI

O‘zbekistonning uzum navlari ichida eng ko‘p tarqalganlari "Qizil uzum", "Sariq uzum", "Katta uzum", "Shirin uzum" va "Kichik uzum" kabi navlardir. Har bir navning o‘ziga xos xususiyatlari, ta’mi va foydalanish maqsadlari mavjud. Qizil uzum navlari O‘zbekiston uzumchiligi tarixida alohida o‘rin tutadi. Ular ko‘pincha vinoni tayyorlashda ishlatiladi. Qizil uzumning eng mashhur navlaridan biri "Katta qizil" hisoblanadi. Bu uzum navining mevalari katta, qizil rangli va juda shirin. Ular asosan quruq va shirin vinolar tayyorlashda qo‘llaniladi. "Katta qizil" uzumining o‘ziga xos xususiyati shundaki, u yuqori sifatli vino ishlab chiqarish uchun juda mos keladi. Ushbu uzum navidan tayyorlangan vino o‘zining mukammal ta’mi va aromasi bilan ajralib turadi. Sariq uzum navlari ham O‘zbekistonda keng tarqalgan. Ularning ichida "Sariq uzum" va "Jumbo" navlari mashhurdir. Sariq uzumlar ko‘pincha oq vinolar tayyorlashda ishlatiladi. Ularning mevalari o‘rtacha katta, sariq rangli va yuqori shirinlikka ega. Sariq uzumdan tayyorlangan vinolar, odatda, engil va yoqimli ta’mga ega bo‘lib, iste’molchilar orasida juda mashhurdir. Bu navlar, shuningdek, oziq-ovqat mahsulotlari tayyorlashda ham qo‘llaniladi, masalan, uzum sharbati yoki uzum pastasi tayyorlashda. Katta uzum navlari O‘zbekistonning janubiy hududlarida keng tarqalgan. Ular, asosan, quruq va shirin vinolar tayyorlashda ishlatiladi. "Katta uzum" navining mevalari juda katta va shirin bo‘lib, ularning ta’mi juda yoqimli. Bu

uzumdan tayyorlangan vinolar ko‘pincha yuqori sifatli va boy aromaga ega bo‘ladi. [1]

MUHOKAMA VA NATIJALAR

Katta uzum navlari, shuningdek, quruq uzum sifatida ham iste’mol qilinadi. Shirin uzum navlari O‘zbekistonda ham keng tarqalgan. Ular ko‘pincha yangi iste’mol qilish uchun yetishtiriladi. "Shirin uzum" navining mevalari juda shirin va yumshoq bo‘lib, iste’molchilar orasida juda mashhurdir. Ushbu uzum navidan tayyorlangan shirinliklar va desertlar ham juda yoqimli va mazali bo‘ladi. Shirin uzumlar, shuningdek, quruq uzum sifatida ham ishlatiladi, bu esa ularni yanada ko‘proq talab qilinadigan mahsulotga aylantiradi.[2]

Kichik uzum navlari O‘zbekistonda kamroq tarqalgan, lekin ular ham o‘ziga xos xususiyatlarga ega. "Kichik uzum" navining mevalari kichik va juda shirin bo‘lib, ko‘pincha quruq uzum sifatida iste’mol qilinadi. Bu navning o‘ziga xos xususiyati shundaki, u yuqori shirinlikka ega bo‘lib, iste’molchilar orasida juda mashhurdir. Kichik uzumlar, shuningdek, turli xil shirinliklar tayyorlashda ham qo‘llaniladi. O‘zbekiston uzumchiligi tarixiy jihatdan juda boydir. Bu yerda uzum yetishtirish an’analari asrlar davomida shakllangan. O‘zbekistonning uzum navlari o‘zining sifatli va mazali mevalari bilan dunyoga tanilgan. O‘zbekiston uzumchiligi, shuningdek, iqtisodiy jihatdan ham muhim ahamiyatga ega. Uzum yetishtirish va vino ishlab chiqarish O‘zbekiston iqtisodiyotining muhim tarmog‘idir. Bu sohada ko‘plab odamlar ishlaydi va bu ularning yashash darajasini oshirishga yordam beradi.[3]

O‘zbekistonning uzum navlari nafaqat ichimliklar tayyorlashda, balki oziq-ovqat mahsulotlari va boshqa turli sohalarda ham keng qo‘llaniladi. Uzum, shuningdek, sog‘liq uchun foydali bo‘lgan ko‘plab vitaminlar va minerallarni o‘z ichiga oladi. U inson organizmi uchun zarur bo‘lgan ko‘plab foydali moddalarni taqdim etadi. Uzumning antioksidant xususiyatlari, yurak va qon tomirlarining sog‘lig‘ini saqlashga yordam beradi. O‘zbekiston uzumchiligi kelajagi porloq. Davlat, uzum yetishtirish va vino ishlab chiqarishni rivojlantirish uchun ko‘plab dasturlarni amalga oshirmoqda. Yangi texnologiyalar va innovatsiyalarni joriy etish orqali uzum navlarini yaxshilash va ularning sifatini oshirishga qaratilgan chora-tadbirlar ko‘rilmoqda. O‘zbekiston uzumchiligi xalqaro bozorda ham o‘z o‘rnini mustahkamlashga intilmoqda.[4]

XULOSA

Xulosa qilib aytganda, O‘zbekistonda yetishtiriladigan vinobop uzum navlari o‘zining xilma-xilligi, ta’mi va foydali xususiyatlari bilan ajralib turadi. Ushbu navlar nafaqat ichimliklar tayyorlashda, balki oziq-ovqat mahsulotlari va boshqa sohalarda ham keng qo‘llaniladi. O‘zbekiston uzumchiligi kelajagi porloq bo‘lib, davlat tomonidan qo‘llab-quvvatlanmoqda. Bu esa O‘zbekistonni uzum yetishtirish bo‘yicha yetakchi davlatlardan biriga aylantiradi.

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НОВЫЙ ЭТАП РАЗВИТИЯ УЗБЕКИСТАНА И ФИНАНСИРОВАНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ

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Аннотация: В данной статье рассматриваются конкретные аспекты использования образовательных (высших) ресурсов. Тот факт, что большая часть расходов, необходимых для осуществления деятельности высших учебных заведений, покрывается за счет бюджетных средств, требует формирования особых отношений по поводу расходования этих средств. Финансирование высшего образования осуществляется в двух формах: за счет средств государственного бюджета и за счет средств, полученных от оказания образовательных услуг.

Ключевые слова: бюджетные средства, финансирование системы образования, государственный бюджет, расходы бюджета, финансирование высшего образования, образовательные учреждения, выпускник, мировая экономика, финансовая стабильность, бакалавриат, магистратура, финансовый контроль, научные предложения, рыночная экономика.

Abstract: This article examines specific aspects of the use of educational (higher) resources. The fact that most of the costs required to implement the activities of higher education institutions are covered by budgetary funds requires the formation of special relations regarding the expenditure of these funds. Financing of higher education is carried out in two forms: at the expense of the state budget and at the expense of funds received from the provision of educational services.

Keywords: budgetary funds, financing of the education system, state budget, budget expenditures, financing of higher education, educational institutions, graduate,

global economy, financial stability, bachelor's degree, master's degree, financial control, scientific proposals, market economy.

Введение. В особый период социально-экономического развития нашей страны, получивший название «Новый Узбекистан», серьезное внимание уделяется всем сторонам общественной жизни, в том числе вопросу рационального и эффективного использования имеющихся денежных средств. Ведь этого требует сама современная рыночная экономика. Без такого использования имеющихся средств невозможно достичь намеченного результата или цели (здесь не важно, бюджетные ли это средства или внебюджетные). Данные замечания касаются всех хозяйствующих субъектов (а также юридических и физических лиц). В то же время для бюджетных учреждений эта вещь особенно важна. Для части из них, финансируемой за счет бюджетных средств, важность рационального и эффективного расходования средств чрезвычайно велика.

Основные результаты исследования. Практика в нашей стране такова, что система образования, в том числе и высшее образование, входящее в ее состав, финансируется из бюджета. Фактически только в Узбекистане такая система не сформирована. Мировой опыт показывает, что во многих странах особое внимание уделяется финансированию системы образования (в том числе высшего). По данным Всемирного банка, в последние годы на образование направляется в среднем 12,0-14,0% государственных расходов в мире. При этом финансирование высшего образования в странах мира осуществляется двумя способами: за счет средств государственного бюджета и за счет средств от оказания образовательных услуг. В частности, во многих странах Европы образовательные учреждения (в том числе высшие) финансируются за счет государственного бюджета. Согласно мировой практике, средства государственного бюджета приобретают приоритет при финансировании высших учебных заведений в экономически развитых странах. Например, в настоящее время в таких странах, как Австрия, Италия, Франция, Норвегия, Дания и Швеция, бюджетные средства составляют более 90,0% источников финансирования высших учебных заведений. Уровень этого показателя составляет почти 80,0% в таких странах, как Великобритания, Португалия, Финляндия, Нидерланды и Испания, и все это является показателем того, что все вышеперечисленные страны проводят активную политику в области высшего образования.

Тот факт, что ситуация такова, т.е. то, что большая часть расходов, необходимых для осуществления деятельности высших учебных заведений, покрывается за счет бюджетных средств, требует формирования особых отношений по поводу расходования этих средств. Особенно это касается рационального и эффективного использования больших объемов бюджетных

средств, расходуемых в этих вузах. С другой стороны, тот факт, что ситуация такая, требует проведения ряда научных исследований в этом направлении.

На мировом уровне до сих пор проведено и проводится множество научных исследований, направленных на обеспечение рационального и эффективного расходования бюджетных средств в высших учебных заведениях и его дальнейшее совершенствование. В них, прежде всего, различные формы получения доходов высших учебных заведений мира, в частности, средства государства или государственного бюджета, средства от коммерциализации образовательных услуг, спонсорские средства, средства, полученные в форме создания Приоритетное значение придается фонду выпускников, средствам от коммерциализации научных исследований, а также вопросу увеличения их объема. Также в центре внимания этих исследований находится то, как расходуются доходы вузов, которые формируются такими способами и формами. Однако в условиях современной глобализации и особенно в условиях инновационного и цифрового развития мировой экономики известно, что вопросы обеспечения разумного и эффективного использования бюджетных средств в строгом соответствии с принципами рыночной экономики в высшие учебные заведения недостаточно научно исследованы. Также на сегодняшний день ощущается, что научные исследования по совершенствованию направлений расходования средств на научно-инновационные разработки, широкому внедрению бюджетных средств через метод ориентированного на результат финансирования в системе высшего образования проведены недостаточно.

Более того, в период «Нового Узбекистана» реализуются фундаментальные реформы на всех этапах образования в нашей стране, включая высшее образование. За последние годы количество наших высших учебных заведений увеличилось в 2,5 раза и достигло 200. Уровень его охвата увеличивается с 9,0% до 38,0%[1]. Определяется ряд задач по обеспечению финансовой независимости и стабильности высших учебных заведений, усилению их материально-технического обеспечения, среди прочего, «постепенный перевод высших учебных заведений на систему самофинансирования, обеспечение финансовой стабильности, совершенствование системы оплаты труда, внедрение эффективных и прозрачных механизмов финансирования».

В «Концепции развития системы высшего образования Республики Узбекистан до 2030 года», утвержденным по Указу Президента Республики

[1] Послание Президента Шавката Мирзиёева Олий Мажлису и народу Узбекистана. 20 декабря 2022 г. Источник: https://president.uz/ru/lists/view/5774

Узбекистан от 8 октября 2019 года[2], в §6 предназначено задачи по обеспечению финансовой самостоятельности и стабильности, укрепление материально-технического обеспечения высших образовательных учреждений. В ней отмечено, что в целях обеспечения финансовой самостоятельности и стабильности, укрепления материально-технического обеспечения высших образовательных учреждений проводятся следующие мероприятия:

поэтапный перевод высших образовательных учреждений на систему самофинансирования, обеспечение финансовой стабильности, совершенствование системы оплаты труда, внедрение эффективных и прозрачных механизмов финансирования;

поэтапный переход на систему самостоятельного установления размеров платного контракта по направлениям образования бакалавриата (специальностям магистратуры), принимая во внимание потребность отраслей экономики в кадрах, а также исходя из рейтинга и уровня окупаемости расходов высших образовательных учреждений в перспективе;

развитие деятельности высших образовательных учреждений по экспорту образовательных и оказанию дополнительных услуг;

организация работ по строительству, реконструкции и капитальному ремонту на основе современных требований, применение передовых технологий и инженерных решений в организации работ по применению в этом процессе ресурсосберегающих и быстровозводимых конструкций и материалов на основе инновационных технологий;

обеспечение высших образовательных учреждений современными программными продуктами, создание эффективных механизмов непрерывного обеспечения учебных и научных процессов учебным и лабораторным оборудованием, а также лабораторными материалами (реактивами, химической посудой, компонентами, биологическим материалом и другими объектами) в необходимых количествах;

своевременное обеспечение растущих потребностей в отношении мест проживания студентов, библиотек, учебных мастерских, лабораторий, спортивно-оздоровительных объектов и объектов социальной инфраструктуры, укрепление их материально-технической базы на основе современных требований;

создание дополнительных условий для студентов с ограниченными возможностями в зданиях студенческих общежитий и высших образовательных учреждений, принятие мер по обеспечению образовательных учреждений

[2] Указ Президента Республики Узбекистан от 8 октября 2019 года «Концепции развития системы высшего образования Республики Узбекистан до 2030 года». № УП-5847. Источник: https://lex.uz/ru/docs/4545887

необходимой литературой и методическими пособиями для данной категории студентов;

создание благоприятных условий для проживания и обучения иностранных граждан в высших образовательных учреждениях;

создание инновационных библиотек, регулярное обогащение их книжного фонда учебной литературой нового поколения;

бесперебойное обеспечение высших образовательных учреждений высокоскоростным интернетом, расширение инфраструктурных возможностей для самостоятельного обучения студентов;

расширение возможностей для безвозмездного пользования студентами, преподавателями и молодыми исследователями электронными образовательными ресурсами, электронными каталогами и базами данных современной научной литературы;

материальное стимулирование и поддержка студентов из слоев населения, нуждающихся в социальной защите;

создание в высших образовательных учреждениях эндаумент-фондов (endowment fund), финансируемых за счет средств, поступивших от коммерциализации результатов спонсорских и научно-исследовательских работ, целевых капиталов и иных средств.

Такие задачи, как поэтапный переход на систему самостоятельного определения договорных сумм по направлениям бакалавриата (магистратуры) исходя из кадровой потребности отраслей экономики и рейтинга вузов в будущем и уровня определено возмещение собственных расходов.

С другой стороны, в годы периода «Нового Узбекистана» Президентом Республики Узбекистан от 28 января 2022 года № ПФ-60 «О стратегии развития Нового Узбекистана на 2022-2026 годы», Постановление №ПФ-5847 от 8 октября 2019 года «Об утверждении концепции развития системы высшего образования Республики Узбекистан до 2030 года», ПП-60 от 24 декабря 2021 года «Дополнительные меры по обеспечению академической и организационно-независимость руководства государственных вузов «о событиях», Постановления ПП-61 от 24 декабря 2021 года «О мерах по обеспечению финансовой независимости государственных высших учебных заведений» и ПП-3231 от 21 августа 2017 года «О дальнейшем совершенствовании механизма финансирования образовательных и медицинских организаций и системы государственного финансового контроля», Постановление Кабинета Министров Республики Узбекистан от 3 декабря 2019 года №967 «О поэтапном переводе высших учебных заведений на систему самофинансирования», Постановление № 824 от 31 декабря 2020 года «О мерах по совершенствованию системы организации образовательного процесса в высших учебных заведениях» принятие и необходимость

выполнения задач, определенных в других нормативных правовых документах, связанных с данной сферой, в свою очередь требует проведения и продолжения специальных научных исследований с точки зрения рационального, эффективного и результативного использования бюджетных средств на основе принципов и механизмы рыночной экономики в высших учебных заведениях.

Заключение. Для этого, при реализации данных исследований решается вопрос: а) исследования правовых основ эффективного использования бюджетных средств в высших учебных заведениях и изучения зарубежного опыта; б) анализ текущего состояния бюджетных средств в составе доходов высших учебных заведений и определение его особенностей; в) показать роль внебюджетных фондов в составе доходов высших учебных заведений и выявить ее особенности в целях сравнения (оценки) со сравнительной точки зрения и формирования соответствующих выводов; ж) разработка современных направлений эффективного использования бюджетных средств в высших учебных заведениях, отвечающих требованиям рыночной экономики, и их научно-практическое обоснование; г) разработать пути эффективного использования бюджетных средств в высших учебных заведениях на основе реализации альтернативных реформ в соответствии с требованиями времени; е) и, наконец, учитывая все вышеизложенное, необходимо обратить внимание на аспекты, связанные с разработкой научных предложений и практических рекомендаций, направленных на эффективное использование бюджетных средств в высших учебных заведениях и их обоснование.

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УСОВЕРШЕНСТВОВАНИЕ ПОДГОТОВКИ КАДРОВ НА ОСНОВЕ ИНТЕГРАЦИИ РЫНКОМ ТРУДА С ВЫСШИМИ ОБРАЗОВАТЕЛЬНЫМИ УЧРЕЖДЕНИЯМИ

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Аннотация. В данной статье обосновываются цели и задачи подготовки высококвалифицированных кадров – бакалавров (магистров) высших образовательных учреждений. В ней отмечено, что в пути процветания страны, развитии экономики, благосостояния народа занимает устойчивое место из числа основных требований рыночной экономики, основанный на твёрдой конкуренции в условиях нынешнего мирового финансово-экономического кризиса. Также в статье приводятся мероприятия для активного привлечения заказчиков кадров к процессу подготовки высококвалифицированных специалистов. В качестве выводов, руководителям организаций, высших образовательных учреждений, потребителей-заказчиков, специалистам отрасли, даются соответствующие рекомендации: для формирования спроса на высококвалифицированные кадры, восполнения предприятий знатными, конкурентоспособными кадрами, для предложения качественных образовательных услуг высшим образовательным учреждением, управления подготовке конкурентоспособных высококвалифицированных кадров по заказу потребителей-предприятий и организаций.

Ключевые слова: высококвалифицированные кадры, бакалавр, магистр, специалист, конкурентоспособность, трудовой потенциал, выпускник, высшее

образование, заказчик, высшие образовательные учреждения, трудовая деятельность, производство, студент, потенциальные работодатели, научные работы, профессия, непрерывное образование, учебный процесс, маркетинговые исследования, потребитель, целевая подготовка, контрактационные соглашения, квалификационная практика, квалификация, должность, ответственность.

Abstract. This article substantiates the goals and objectives of training highly qualified personnel - bachelors (masters) of higher educational institutions. It notes that in the path of prosperity of the country, development of the economy, well-being of the people, it occupies a stable place among the main requirements of the market economy, based on strong competition in the conditions of the current global financial and economic crisis. The article also provides measures for the active involvement of customers of personnel in the process of training highly qualified specialists. As conclusions, the heads of organizations, higher educational institutions, consumers-customers, industry specialists are given the appropriate recommendations: to form demand for highly qualified personnel, replenish enterprises with noble, competitive personnel, to offer high-quality educational services by a higher educational institution, management of training competitive highly qualified personnel by order of consumers-enterprises and organizations.

Key words: highly qualified personnel, bachelor, master, specialist, competitiveness, labor potential, graduate, higher education, customer, higher educational institutions, labor activity, production, student, potential employers, scientific works, profession, continuous education, educational process, marketing research, consumer, targeted training, contracting agreements, qualification practice, qualification, position, responsibility.

Введение. Актуальность темы исследования. Обзор нормативных документов. Цель и задачи подготовки высококвалифицированных кадров – бакалавров (магистров) и воспитания совершенной личности являются одним из приоритетных направлений идеологии национальной независимости. В целях коренного анализа содержания подготовки высококвалифицированных кадров в соответствии с приоритетными задачами социально-экономического развития страны, создания необходимых условий по подготовке специалистов – высококвалифицированных с высшим образованием на уровне международных стандартов принято Постановление Президента Республики Узбекистан от 20 апреля 2017 года № ПП-2909 «О мерах по дальнейшему развитию системы высшего образования» [1]. По требованию настоящего Постановления утверждена Программа комплексного развития системы высшего образования на период 2017-2021 годы по качественному и кардинальному совершенствованию уровня высшего образования, укреплению

и модернизации материально-технической базы высших образовательных учреждений, оснащению современными учебно-научными лабораториями, информационно-коммуникационными технологиями.

Эффективное использование информационно-коммуникационных систем в стране, увеличение размеров доходов и уменьшение расходов во всех отраслях экономики, внедрение и совершенствования новой техники и технологий, развитие экономических методов хозяйственной деятельности, производство конкурентоспособных товаров и услуг, в том числе, подготовка конкурентоспособных высококвалифицированных кадров в высших образовательных учреждениях, целевое использование их способности в пути процветания страны, развитии экономики, благосостояния народа занимает устойчивое место из числа основных требований рыночной экономики, основанный на твёрдой конкуренции в условиях нынешнего мирового финансово-экономического кризиса. Потому что, в положительном решении вышеприведенных глобальных проблем имеет большое значение место высококвалифицированных кадров, являющихся составной части огромного научного, творческого, интеллектуального, трудового потенциала страны, т.к. окончившие высшие образовательные учреждения в годы независимости до настоящего времени эффективно работают в предприятиях и организациях на основании требований рыночной экономики.

Вместе с тем полностью не решен ряд актуальных вопросов своевременной подготовки высококвалифицированных специалистов, отвечающих современным требованиям, для социально-экономического развития регионов республики с учетом потребностей отраслей и сфер экономики в необходимых специальностях, формирования содержания высшего образования в соответствии с программами перспективного развития и производственными, техническими и технологическими отношениями непосредственно на предприятиях, в учреждениях, трудоустройства в соответствии со специализацией и профессией [2].

Самое главное, не отвечает требованиям участие отраслей экономики в процессах формирования портфеля заказов на подготовку высококвалифицированных кадров в перспективе, разработке квалификационных требований к выпускникам вузов, обеспечении качества подготовки специалистов, необходимых для отраслей и сфер экономики. В Постановлении Президента [2] указывается, что имеются разрывы в системе взаимосвязи высшее образование – наука – производство, не обеспечена их интеграция. Научно-исследовательские институты не привлечены на должном уровне к процессу подготовки кадров в высшем образовании, научные исследования осуществляются без учета реальных потребностей отраслей экономики. Отсутствие системной подготовки квалифицированных научных и

научно-педагогических кадров приводит к снижению научного потенциала высших образовательных учреждений.

Кроме того, в «Концепции развития системы высшего образования Республики Узбекистан до 2030 года» [3] приводятся пути активного привлечения заказчиков кадров к процессу подготовки высококвалифицированных специалистов. В ней отмечено, что в целях активного привлечения заказчиков кадров к процессу подготовки высококвалифицированных специалистов проводятся следующие мероприятия:

формирование содержания учебных планов и программ, а также распределение часов по предметам специальности в сотрудничестве с заказчиками кадров исходя из специфики направлений и специальностей образования на основе последних достижений науки и техники;

формирование тем выпускных квалификационных работ, магистерских и докторских диссертаций исходя из проблем реального сектора экономики и регионов (областей, районов, городов, махалли, региональных объектов), а также переход к углубленному изучению тем в узком охвате;

укрепление связей высших образовательных учреждений с производственными предприятиями, а также организация их деятельности в форме кластера;

налаживание деятельности высших образовательных учреждений в регионах с развитым производством и экономических зонах;

создание условий для трудовой деятельности студентов на производственных предприятиях и в организациях соответствующей отрасли в свободное от образовательного процесса время;

обеспечение взаимовыгодного сотрудничества высших образовательных учреждений с производственными предприятиями, организациями, научно-исследовательскими учреждениями в направлении реализации научно-технических заказов и грантов, поиска новых решений имеющихся проблем в производстве, активного привлечения опытных практиков к учебному процессу, широкого использования производственной инфраструктуры и практических примеров в образовании;

организация на производственных предприятиях деятельности филиалов кафедр предметов специальности, организация деятельности структурных подразделений производственных предприятий, технопарков, бизнес-инкубаторов и коворкинг-центров при высших образовательных учреждениях, стимулирование эффективного сотрудничества образования с производством путем осуществления трансфера технологий;

внедрение системы повышения квалификации педагогических работников в процессе производства, а также внедрение в практику действенных

механизмов привлечения к образовательному процессу специалистов с большим опытом в производстве, но не имеющих ученой степени, в частности в качестве приглашенных и почетных преподавателей, при этом прием на работу данных специалистов на соответствующие должности осуществлять в соответствии с их стажем в определенной сфере;

совершенствование порядка эффективной организации учебных занятий и практики студентов на производственных предприятиях с внедрением при этом системы выдачи сертификатов, подтверждающих практические навыки;

создание механизмов целевых образовательных программ, профессиональных курсов повышения квалификации и переподготовки, тренингов на базе высших образовательных учреждений путем привлечения опытных практиков от производства на основе обращений заказчиков кадров;

создание «центров карьеры», деятельность которых направлена на всестороннее содействие прохождению практики и трудоустройству студентов, формирование перечня потенциальных работодателей и сотрудничество, а также продуктивное использование потенциала бывших выпускников на основе реформирования структуры высших образовательных учреждений;

поддержка деятельности центров по оценке знаний и навыков выпускников высших образовательных учреждений;

налаживание взаимовыгодного сотрудничества заказчиков кадров, научно-исследовательских и высших образовательных учреждений по таким вопросам, как проведение научных работ и коммерциализация их результатов, развитие деятельности бизнес-инкубаторов и венчурного финансирования, совершенствование соответствующих нормативно-правовых актов по данным вопросам;

внедрение системы бинарных (двойных) защит по присвоению ученой степени доктора (базовой докторской) в целях обеспечения оперативного внедрения в практику научных результатов докторских диссертаций, повышения и стимулирования заинтересованности молодежи в научной деятельности, повышения престижа научной работы;

определение размеров и продолжительности грантов исходя из коммерциализации и сроков внедрения в практику научных результатов в конкурсах фундаментальных, прикладных и инновационных исследований;

формирование состава попечительских советов за счет заказчиков кадров, крупных работодателей, общественных деятелей и предпринимателей, достигших значительных успехов в соответствующей отрасли;

введение традиции ежегодного проведения национального опроса среди заказчиков кадров на республиканском уровне в целях определения соответствия квалификации выпускников требованиям производства, выявления и устранения допущенных недостатков при подготовке кадров.

Основные результаты исследования. Стремление молодых людей на получение высшего образования, спрос предприятий и организаций на высококвалифицированные кадры, повышение авторитета и уважение людей с высшим образованием, увеличение их заработной платы, большое процентное соотношение количества молодежи в демографических показателях населения, а также, ограничение квоты на прием, многократные попытки абитуриентов для успешной сдачи тестовых испытание и др. факторы воздействуют на повышение показателей приема высших образовательных учреждений Республики Узбекистан за последние годы.

Система непрерывного образования до высшего образования – обязательные, остальная часть системы – добровольные. Однако, обязательная часть непрерывного образования не могут удовлетворять все требования и потребности людей. Поэтому иметь высшего образования, соответственно, высшему образованию профессию, специальность, квалификацию, обладание знаний, навыков и опыта способствует нахождение свое место в обществе, работать в ответственных должностях и в престижных организациях (предприятий, учреждений) и повышение по служебным ступенькам, повышение мировоззрение, стать высококвалифицированным кадрам, изучать мировые науки и знания, учиться на следующие уровни непрерывного образования или работать по условиям контрактации в престижных высших образовательных учреждений развитых стран и др. Все эти задачи являются основными условиями укрепления независимости Республики Узбекистан, повышения развития страны и благосостояния народа. В зарубежных странах потребности населения на получение высшего образования, в основном, удовлетворяется увеличением количества негосударственных высших образовательных учреждений и созданием в них необходимые условия для эффективного учебного процесса. В нашей стране тоже можно применять этот опыт.

Для предложения качественных образовательных услуг высшим образовательным учреждением, управления подготовке конкурентоспособных высококвалифицированных кадров по заказу потребителей-предприятий и организаций, руководителей высших образовательных учреждений, специалистам данной области рекомендуем следующие: а) на основе маркетинговых исследований проводить мониторинг деятельности по престижности, современности, нуждаемости, спросу потребителей-предприятий и физических лиц направления образования бакалавриата (специальности магистратуры) и составить предложения, провести меры по открытию новых направлений (специальностей), продолжению или закрытию отдельных направлений (специальностей), не отвечающие требованиям рыночной экономики и современности; б) в сотрудничестве с потребителями и

(предприятий и организаций) и распределительной комиссией организовать семинары, конференции, аукционы и мероприятий, обеспечить участие выпускников в этих мероприятий, принимать важные обоснованные решения и другие в направлении качественной и целевой подготовки высококвалифицированных кадров – бакалавров (магистров).

Выводы и предложения. В целях формирования спроса на высококвалифицированные кадры, подготавливаемые в высших образовательных учреждениях, постоянно восполнять предприятий знатными, конкурентоспособными кадрами, руководителям организаций, потребителей-заказчиков, специалистам отрасли рекомендуем следующие: а) провести мониторинг свободных, незанятых (вакантных) и освобождающихся мест; б) в сотрудничестве с высшими образовательными учреждениями составлять контрактационные соглашения по подготовке высококвалифицированных кадров нужным в перспективе направлениям и специальностей, по условиям соглашений постепенно обращаться в высшее образовательные учреждения по следующим вопросам: как обучать студентов, какие предметы должны преподаваться в углубленном режиме или наоборот в малом количестве часов, где и каким образом проводятся квалификационная практика, какие навыки прививаются студентам в этих процессах, по каким темам (содержанием) выполняются квалификационно-выпускные работы и магистерские диссертации и другие; в) по приглашению высших образовательных учреждений активно участвовать в собраниях и мероприятиях, предназначенных качественной подготовке бакалавров и магистров, организовывать такие мероприятия в предприятиях; г) приглашать специалистов, научных работников, деловых людей для проведения семинаров, конференций, а также для чтения проблемных лекций по отраслям экономики, специализации предприятий; д) своевременно и правильно выполнять условий контрактационных соглашений, составленные с высшим образовательным учреждением по подготовке высококвалифицированных кадров; е) принять на работу бакалавров и магистров по специальности на основе контрактационных соглашений или имеющие направления распределительной комиссии выпускников высших образовательных учреждений, помочь им в развитие способностей, в создании навыков к труду, изучению деловых методов, адаптироваться в предприятие, получение заработную плату за работу, создать все необходимые условия – жилья, отдых, творчество и другие.

Для успешного завершения высшего образовательного учреждения, обладания современных знаний, стать высококвалифицированным конкурентоспособным кадром, устраиваться на работу в престижных организациях (на учебу последующей уровне образования) выпускникам рекомендуем следующие: а) полное осваивание образовательных программ,

обладать квалифицированными требованиями на бакалавра (магистра), уметь применять полученных во время учебы теоретические знания в практике, окончив учреждения идти на работу в условиях минимум на три года на основании направления распределительной комиссии (для выпускника государственного гранта) или предприятию-заказчику на основе контрактационных соглашений; в) после принятия на работу на основании должностной инструкции возлагаемой работы (должность, поручение) аккуратно выполнять задания в пределах свои компетенции, ответственно и добросовестно подходить к своим служебным обязанностям, применять свои знание, навыки, опыт и квалификацию в развитии экономики предприятия, повысить мировоззрения, постоянно работать над собой, стремиться на повышение по службе в качестве резервного кадра в перспективе, показать активность при составлении сотруднические соглашения окончившей высшей образовательной учреждения и предприятием, в которой он работает, в полном выполнении условий данного соглашения.

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BOLALARDA KO'KYO'TAL KASALLIGI

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Annotatsiya

Bugungi kunda bolalar orasida ko'kyo'tal kasalligi ko'p uchramoqda. Shuning uchun ushbu kasallik haqida ma'lumotlarga ega bo'lib, o'z vaqtida oldi olinsa, davolash ishlari o'z vaqtida boshlansa ushbu kasallikni to'liq nazorat qilish mumkin va yuzaga keladigan asoratlardan holi bo'lish mumkin. Ushbu maqolada ko'kyo'talning kelib chiqish sabablari, klinik manzarasi, davosi, profilaktikasi yoritilgan.

Kalit so'zlar: inkubatsion davr, gipertermiya, intoksikatsiya, spastik yo'tal, repriz, akrotsianoz, apnoe, leykotsitoz, profilaktika, karantin, dezinfeksiya.

Ko'kyo'tal

Ko'kyo'tal - havo-tomchi yo'li bilan yuqadigan kasallik bo'lib, asosan nafas yo'llari va a'zolarining zararlanishi, xurujsimon yo'tal va asab sistemasi faoliyati-ning buzilishi bilan kechadi. Ko'kyo'talni qo'zg'atuvchi mikroblar 1906 yilda J.Borde va O.Jangu tomonidan kashf etilgan. Kasallik manbai bo'lib bemor odam hisoblanadi.

Patogenezi

Ko'kyo'tal mikroblari nafas yo'llarining silindrli epiteliysida o'rnashib ko'payadi. Bu davrda mikroblarning ko'pi nobud bo'ladi va toksin ajratadi. Ajralgan toksin asab sistemasiga, qon tomirlariga, nafas a'zolariga ta'sir etadi. Natijada bronxlar devorlarining mushaklari qisqarib, bronxospazmga olib keladi, periferik qon tomirlari ham torayib, nafas mushaklari spastik qisqaradi.

Klinik manzarasi

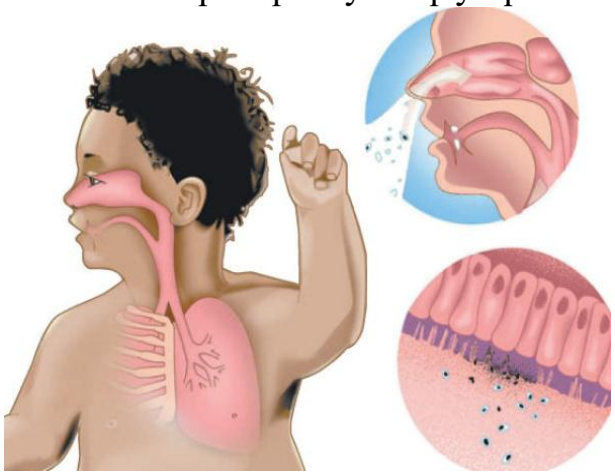
Ko'kyo'talning kechishida bir necha davr farq qilinadi:

1) yashirin (inkubasion) davr;
2) kataral;
3) spastik, xurujsimon (yo'tal davri);
4) sog'ayish davri.

Yashirin davr 3-4 kundan to 10-14 kungacha davom etadi, o'rtacha 5-8 kunni tashkil etadi.

Kataral davr 12-15 kungacha cho'ziladi. Kasallik yo'tal bilan boshlanadi. Yo'tal asta-sekin xurujsimon tusga kiradi va bemorning umumiy ahvoli yo'tal paytida o'zgara boshlaydi.

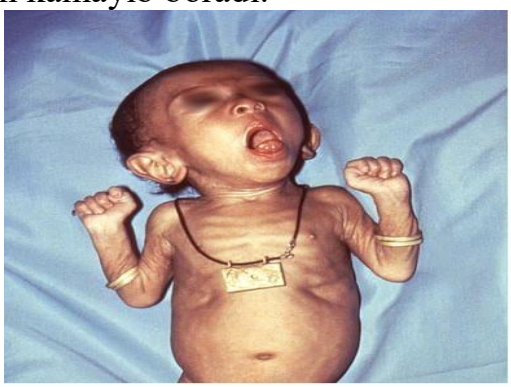
Spastik (xurujsimon) yo'tal davrida bemorning ahvoli og'irlashadi, yo'tal xurujlari uni holsizlantiradi. Bu davrning asosiy belgisi xurujsimon yo'tal bo'lib, u 2-3 haftagacha davom etishi mumkin. Yo'tal birin-ketin keladigan nafas chiqarish harakatlari bilan boshlanadi va oxirida qisqa shovqinli, hushtaksimon nafas olish bilan tugaydi (repriz). Bunday yo'tal xuruji 2-3 tadan 20 martagacha bo'lishi va yelimsimon shilliq chiqishi yoki qayt qilish bilan tugashi mumkin.



Yo'tal xuruji paytida bemorning yuzi qizaradi, ba'zan ko'karadi, lablari ko'karib, biroz shishadi, bo'yin vena tomirlari bo'rtib chiqadi, ko'zlari qon quyilgandek bo'ladi, tili og'zidan chiqib turadi, ayrim hollarda burundan qon ketishi kuzatiladi. Ba'zan xuruj paytida ko'zning oqsil pardasiga qon quyiladi.

Ko'z kon'yuktivasiga qon quyilishi, til osti yuganchasida yara paydo bo'lishi

Xurujlararo davrda ham bemorning beti salqib, shishinqirab turadi, burun-lab uchburchagi ko'kimtir tusda bo'ladi, til osti yuganida ba'zan yara hosil bo'ladi. Yo'tal xuruji boshlanishidan oldin bemor bezovtalanadi, yuzida qo'rqish alomatlari seziladi-ko'zlari katta ochilib, tayanch nuqtasini qidirgandek harakat qila boshlaydi. Bu davr kasallikning 2-3-haftalariga borib o'zining eng yuqori darajasiga yetadi va yo'tal asta-sekin kamayib boradi.



ko'kyo'tal xuruji

Sog'ayish davri 1 haftagacha davom etadi. Bu davrda yo'tal xurujlari kamayib, bemorning kayfiyati yaxshilanadi, ishtahasi ochilib, umumiy ahvoli qoniqarli bo'ladi.

Tashxisi

1) Halqumning orqa devori ta'sirlantiriladi.

2) Epidemiologik vaziyat inobatga olinadi.

3) Bakteriologik tekshirish o'tkaziladi: maxsus oziq muhiti solingan Petri kosachasi yo'tal xuruji paytida 4-6 sm masofadan bemorning og'ziga 10-12 sekund davomida tutib turiladi, keyin uni berkitib, mikrobni o'stirish uchun 37 C haroratli termostatga qo'yiladi.

4) Burun-halqum tamponi bilan Borde-Jangu muhitida surtma tayyorlanib, bir necha kundan so'ng o'sgan mikroblarning turi aniqlanadi.

Davosi

1) Kun tartibini to'g'ri tashkil qilish.

2) Bemorga vitaminli, kuchli va to'q tutadigan ovqatlar berish.

3) Yo'tal xuruji tez-tez qaytalanib tursa, ovqatlantirishdan oldin tinchlantiruvchi (sedativ) dori-darmonlar berish.

4) Toza havoda sayr qilish.

5) Vitamin A, K, C berish.

6) Antibiotiklar.

7) Ko'kyo'talga qarshi 3-6 ml immunoglobulin.

8) Oksigenoterapiya.

9) Neyroleptiklar: aminazin, propazin va boshqalar.

10) Kortikosteroid gormonlar-prednizolon 1-2 mg/kg.

11) Antigistamin preparatlar-dimedrol, suprastin, tavegil, diprazin va boshqalar.

Profilaktikasi

Ko'kyo'talning asosiy profilaktikasi-aholini ko'kyo'talga qarshi faol emlashdir. Ko'kyo'talga qarshi emlash difteriya va qoqshol kasalligiga qarshi vaksinalar bilan

birgalikda o'tkaziladi (AKDS vaksinasi 0,5 ml miqdorda mushak orasiga yuboriladi): 2, 3, 4, 16 oylikda AKDS vaksinalari.

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KICHIK EKIN MAYDONLARI UCHUN KO‘CHMA TOMCHILATIB SUG‘ORISH AGREGATI

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Mamlakatimizda 2020-2030 yillarda aholini va iqtisodiyotning barcha tarmoqlarini suv bilan barqaror ta’minlash, sug‘oriladigan yerlarning meliorativ holatini yaxshilash, suv xo‘jaligiea tamoyillari va mexanizmlarini hamda raqamli texnologiyalarni keng joriy etish, suv xo‘jaligi obyektlarining ishonchli ishlashini ta’minlash hamda yer va suv resurslaridan foydalanish samaradorligini oshirish maqsadida O‘zbekiston Respublikasi Prezidentining 2020-yil 10-iyul dagi PF-6024-son “O‘zbekiston Respublikasi suv xo‘jaligini rivojlantirishning 2020-2030-yillarga mo‘ljallangan konsepsiyasini tasdiqlash to‘g‘risida” gi Farmoni imzolangan. Shunga muofiq yerlarni tekislash ishlarini to‘g‘ri amalga oshirish, shu bilan birgalikda mavjud texnikalarni takomillashtirish va resurstejamkor texnikalarni yaratish maqsad qilib olingan [1,2,3,4].

Dunyoda aholi sonining oshishi, oziq-ovqatga bo‘lgan ehtiyojning ortganligi, sanoat ishlab chiqarishning kengayishi, iqlim o‘zgarishi kabi omillar tufayli suv resurslariga bo‘lgan talab yildan-yilga oshib bormoqda. Oqibatda, jahonning ko‘p mintaqalarida suv resurslari tanqisligining tendensiyasi kuzatilyapti.

Ma’lumki, butun jahonda qishloq xo‘jaligi sohasi suvni eng ko‘p ishlatuvchi sanaladi. Shuning uchun, butun jahon ilm ommasi qishloq xo‘jaligida, xususan sug‘oriladigan dehqonchilik ekin maydonlarida suvdan tejamli foydalanish, shu jumladan, suvni tejaydigan texnologiyalarni keng joriy etishni suv tanqisligini yumshatishning eng ustuvor yo‘li sifatida ta’kidlashadi.

Iste’mol qiladigan suv resurslarining 80 foizi qo‘shni davlatlar hududida shakllanadigan O‘zbekiston suv resurslaridan samarali foydalanish, ayniqsa oxirgi yillarda kuchayib borayotgan suv taqchilligini yumshatish maqsadida ekinlarni sug‘orishning suvi tejovchi tizimlarini keng joriy qilish va suv resurslarini boshqarishda zamonaviy texnologiyalardan foydalanish imkoniyatlarini kengaytirish yo‘nalishida mintaqa davlatlari orasida tashabbuskor bo‘layotganini e’tirof etish joiz [5,6,7].

Ma’lumki, qishloq xo‘jalik ekinlarini sug‘orishni ikki ko‘rinishda amalga oshirish mumkin. Bularning birinchisi suvning o‘z og‘irligi tufayli yer yuzasi bo‘ylab harakatlanishi yordamida amalga oshiriladigan o‘zi oqar (gravitatsion) sug‘orish bo‘lsa, ikkinchisi suvni yuqori bosimda yetkazib berishga asoslangan bosimli sug‘orishdir.

Tomchilatib sug‘orish usuli - ekinning ehtiyojiga mos miqdordagi suvni shlanglar yordamida bevosita uning ildiz qatlamiga yetkazib berishga mo‘ljallangan muhandislik sug‘orish usulidir [8,9,10,11,12].

Ekinlarni yer ustidan sug‘orishning qariyb barcha usullarida (egatlar, yomg‘irlatib, cheklar, polosalar) sug‘orish paytida tuproqda suvga bo‘kish va sug‘orishdan keyin qurib ketish hodisalari yuz beradi. Sug‘orish paytida tuproqda namlikni haddan ziyod ortishi ekinni suvga bo‘ktirsa, sug‘orishlar orasidagi vaqtning uzoqligi tuproq qurib ketishiga sabab bo‘ladi va o‘simlikni suvsiz qoldiradi.

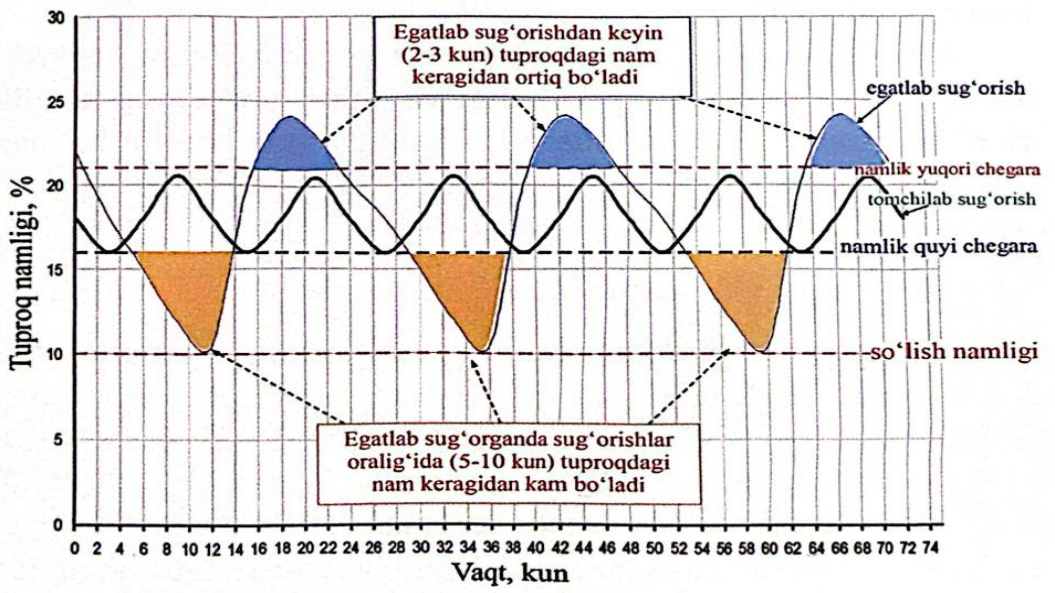
Navbatdagi sug‘orishda ekin yana suvga bo‘kadi, undan keyin esa yana suvsiz qoladi, ya’ni ekin bir stress holatdan chiqib boshqasiga tushaveradi.

Bunday sharoitda ekin hosil yaratish o‘rniga stress holatlardan chiqishga harakat qilaveradi va o‘z energiyasini ana shu stress holatlardan chiqib ketish uchun sarflayveradi.

Tomchilatib sug‘orilganda esa suv ekinning ehtiyojiga mos ravishda dalaning barcha nuqtalariga bir xilda beriladi, ekinlarning ildizlari joylashgan qatlam bir xilda namlanadi. Ekinning ildiz qatlamida doimiy bir xil namlik sharoiti yaratiladi va ekin stress holatga tushishining sabablari bartaraf qilinadi.

Ekinlarni bosimli sug‘orish usullari suvni quvur va shlanglar yordamida bevosita ekinlarning joylashgan nuqtalariga yetkazib berishga mo‘ljallangan muhandislik sug‘orish usullari sanaladlar. Bosimli sug‘orish usullari safiga tomchilatib, yomg‘irlatib va yer ostidan sug‘orish usullari kiradi.

Demak, tomchilatib sug‘orilganda sug‘orishdan avval ham, keyin ham tuproqdagi namlik ekin ehtiyojiga mos bo‘ladi, ekin stress holatga tushmaydi va o‘zining energiyasini to‘liq ravishda faqat hosil yaratish va uni ko‘paytirishga sarflaydi [13,14,15].



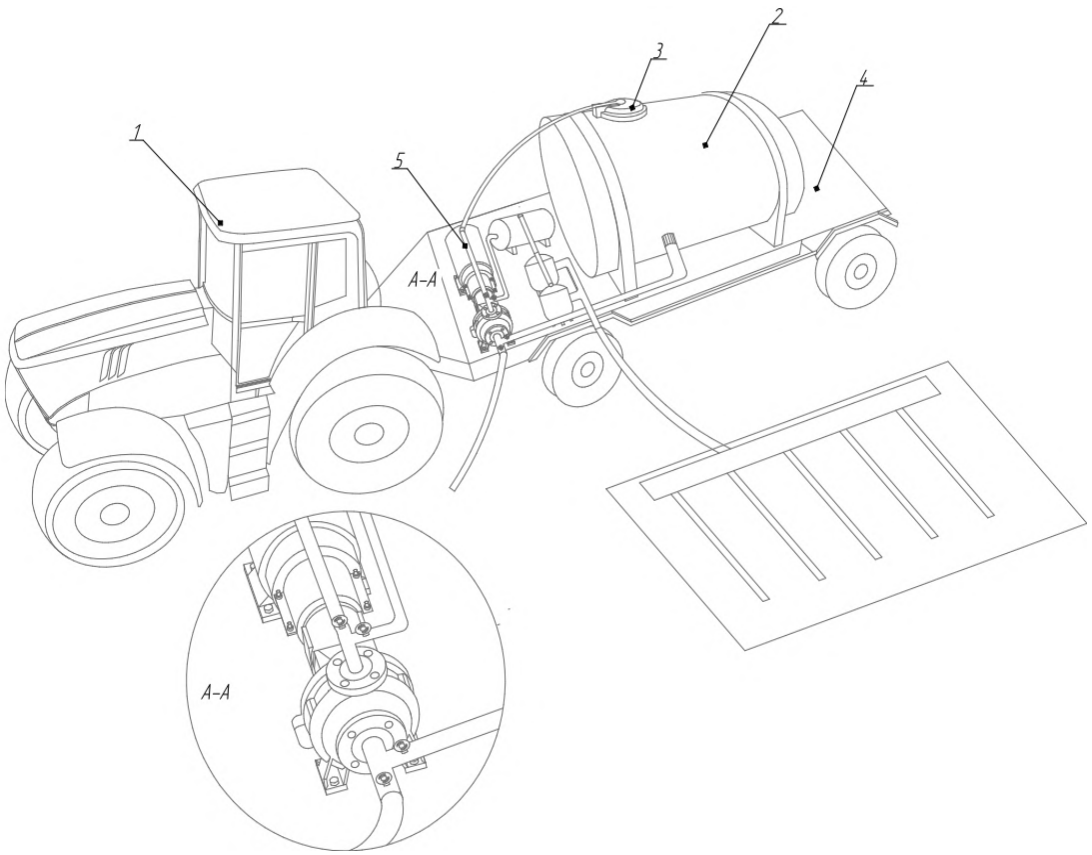
1 – rasm. Ekinni tomchilatib va egatlab sug‘orilganda tuproq namligi o‘zgarishlarining o‘zaro farqlanishi

Tomchilatib sug‘orilganda suv bilan birga oziq moddalar ham eritilgan holatda ekinning ildiz tizimi joylashgan qatlamga yetkazib beriladi, ular behudaga isrof bo‘lmay, ekinga to‘liq yetib boradi.

Dalaning barcha qismidagi ekinlar bir xil suv va bir xil ozuqa oladilar. Natijada dalaning barcha qismlarida ekin bir xilda rivojlanadi va barqaror yuqori hosil beradi.

Xullas, ekinlarni tomchilatib sug‘orilganda mavsum davomida tuproq namligi keskin o‘zgarmaydi, ya’ni tuproq o‘ta qurib ham ketmaydi, ortiqcha namlanib ham ketmaydi, ya'ni tuproqning namligi kichik oraliqda o‘zgaradi. Tomchilatib sug‘orilganda tuproqdagi namlik har doim ekin ehtiyojiga mos bo‘ladi.

Bugungi kunda respublikamiz nafaqat butun dunyoda so‘nggi yillarda kuzatilayotgan suv tanqisligi mavjud. Suv resurslaridan tejab-tergab foydalanish, bunda ilg‘or texnologiyalarni joriy etish zaruratini yuzaga keltirmoqda. Ayniqsa, Amudaryoning eng quyi qismida joylashgan Qoraqalpog‘iston Respublikasi Buxoro, Navoiyning ayrim hududlari va Qashqadaryoning ayrim hududlarida keyingi yillardagi suv tanqisligi qishloq xo‘jaligi ekinlarini yetishtiriga jiddiy ta’sir ko‘rsatmoqda. Bunda suv tejovchi sug‘orish texnologiyalaridan keng foydalangan holda suvni tejash orqali mo‘l hosil olishga intilishmoqda va shu kabi suv tejamkor sug‘orish texnologiyalari joriy etilmoqda.



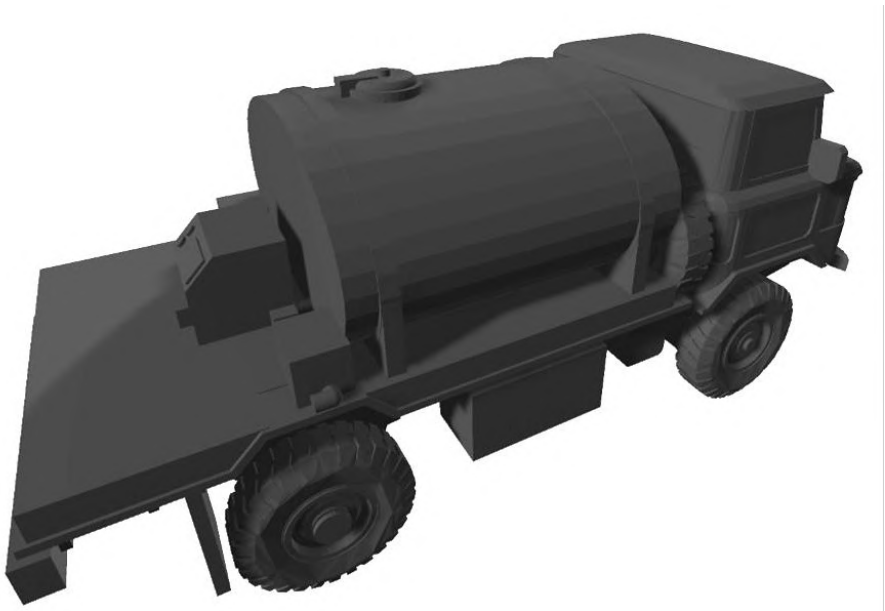
1 – traktor, 2 – suv idishi, 3 – suv idishi qopqog’i, 4 – telejka, 5 – suv nasosi

2-rasm. Ko’chma tomchilatib sug’orish agregatining umumiy ko’rinishi

Bizga ma’lumki bugungi kunda kichik hajmli va qurg‘oqchil hududlarda yerlardan unumli foydalanish va yuqori hosil olish maqsadida yangi suv tejovchi texnika va texnologiyalarni ishlab chiqish va mavjudlarini takomillashtirish maqsad qilib olingan. Ammo kichik hajmli va qurg‘oqchil hududlarda foydalanish uchun bu kabi tizim yoki mashinalar bugungi kunda mavjud emas. Biz ushbu muammoni yechish maqsadida quyidagi konstruksiyani ishlab chiqdik (2-rasm).

Tizimning suv saqlovchi qismi suv idishi, tindirgich yoki sisternalardan, suv tozalovchi qismi qumli, diskli yoki to’rli filtrlardan, suv yetkazib beruvchi qismi nasos qurilmalari, bosh va tarqatuvchi quvurlardan, suv rostlovchi qismi turli zadvijkalar, ventillar va fitinglardan, sug‘oruvchi qismi tomizgichli shlanglar yoki lentalardan iborat bo’ladi. Bundan tashqari tomchilatib sug’orish tizimlari tarkibiga o‘g‘itlovchi moslamalar hamda avtomatik boshqaruv uskunalari ham kiritilishi mumkin. O’g’itlovchi moslamalar o’g’it eritmalarini tayyorlash va suvga qo’shish qurilmalaridan, avtomatik boshqaruv uskunalari esa boshqaruv kompyuteri va turli datchiklardan iborat bo’ladi.

Tomchilatib sug’orish tizimining suv manbasi sifatida yer usti suvlari ishlatilganda tizimning tarkibi uncha o‘zgarmaydi, tarkibga faqat suv idishi - tindirgich qo‘shiladi, boshqa qismlar esa odatdagidek nasos qurilmasi, filtr, o’g’itlovchi moslama, bosh va tarqatuvchi quvurlar, ulovchilar (kran va fitinglar), tomzgichli shlang tomizgichlar kabi qismlardan iborat bo‘ladi. Tomchilatib sug’orish tizimining suv manbasi sifatida yer usti suvlari ishlatilganda tizimning tarkibi uncha o’zgarmaydi, tarkibga faqat suv idishi - tindirgich qoshiladi, boshqa qismlar esa odatdagidek nasos qurilmasi, filtr, o’g’itlovchi moslama, bosh va tarqatuvchi quvurlar, ulovchilar (kran va fitinglar), tomizgichli shlang va tomizgichlar kabi qismlardan iborat bo’ladi [16,17,18,19,20].



3 – rasm. Kichik ekin maydonlari uchun ko‘chma tomchilatib sug‘orish agregatining umumiy ko‘rinishi

Sug‘oriladigan ekin maydonlarining joylashgan o‘rni va ishlatadigan suvining sifatiga ko‘ra tizimning tarkibiga kiruvchi qismlarining boshqa turlari ham bo‘lishi mumkin. Biz tomondan taklif etilayotgan kichik ekin maydonlari uchun ko‘chma tomchilatib sug‘orish agregati ish sifatining yuqoriligi va mehnat sarfining kamayishi bilan yuqori ish unumdorligiga egadir.

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SPORTCHILARDA JISMONIY YUKLAMALARDAN KEYINGI TOLIQISHNI OLDINI OLISH

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Annotatsiya: Jismoniy faoliyat sportchilarning tayyorgarlik jarayonining ajralmas qismidir. Sportchilar har doim yuqori intensivlikda mashq qilishadi, bu esa ularning jismoniy holatini yaxshilashga yordam beradi. Biroq, jismoniy yuklamalardan keyin to‘liqish, ya’ni mushaklarning charchashi va tiklanishi jarayoni, sportchilarning samaradorligi va sog‘lig‘iga ta’sir ko‘rsatishi mumkin. Shu sababli, to‘liqishni oldini olish va tiklanish jarayonini tezlashtirish sportchilarning umumiy salomatligi va sportdagi muvaffaqiyati uchun juda muhimdir.

Kalit so‘zlar: jismoniy faoliyat, jismoniy harakatlar, yuklamalar, sportchilar, sport, salomatlik, mashq, energiya.

To‘liqish jarayoni sportchilarning jismoniy yuklamalaridan keyin boshlanadi va ularning mushaklari, asab tizimi va umuman organizmning tiklanishiga qaratilgan. Jismoniy faoliyat davomida mushaklar energiya zaxiralarini sarflaydi, shuningdek, mikrotravmalar va yallig‘lanish jarayonlari yuzaga kelishi mumkin. Bu jarayonlar sportchilarning charchashini oshiradi va ularning tayyorgarlik darajasini pasaytiradi. Shuning uchun, to‘liqishni oldini olish va tiklanishni tezlashtirish uchun bir qator muhim strategiyalarni qo‘llash lozim. Sportchilar jismoniy yuklamalardan keyin to‘g‘ri ovqatlanishga e’tibor berishlari kerak. Oziqlanish mushaklarning tiklanishi va energiya zaxiralarini to‘ldirish uchun muhimdir. Sportchilarga oqsilga boy oziq-ovqatlarni iste’mol qilish tavsiya etiladi, chunki oqsillar mushaklarning tiklanishida muhim rol o‘ynaydi. Jismoniy faoliyatdan keyin mushaklar oqsillarga muhtoj bo‘ladi, shuning uchun to‘g‘ri ovqatlanish sportchilarga tezroq tiklanishga yordam beradi. Bunga qo‘shimcha ravishda, uglevodlar ham muhimdir, chunki ular energiya manbai sifatida xizmat qiladi. Jismoniy faoliyatdan keyin to‘g‘ri ovqatlanish sportchilarga tezroq tiklanishga yordam beradi. Sportchilar jismoniy yuklamalardan keyin yetarli miqdorda suyuqlik iste’mol qilishlari zarur. Jismoniy faoliyat davomida organizm suyuqlikni yo‘qotadi, bu esa dehidratsiyaga olib kelishi mumkin. Dehidratsiya mushaklarning ishlashini pasaytiradi va tiklanish jarayonini sekinlashtiradi. Shu sababli, sportchilar jismoniy yuklamalardan keyin suyuqlikni to‘ldirishga e’tibor berishlari kerak. Suv, elektrolitlar va sport ichimliklari tiklanish jarayonini tezlashtirishga yordam beradi. Sportchilar, shuningdek, suyuqlikni iste’mol qilish rejimini rejalashtirishlari va jismoniy faoliyat davomida suyuqlikni muntazam ravishda ichishlari muhimdir.[1]

Sportchilarga tiklanish jarayonida dam olish va uyquga e’tibor berishlari muhimdir. Dam olish mushaklarning tiklanishi uchun zarur bo‘lib, sportchilarga o‘z energiyalarini tiklashga yordam beradi. Uyqu vaqtida organizm o‘zini tiklaydi va mushaklar yangilanadi. Sportchilar o‘z uyqu rejalarini to‘g‘ri tashkil etishlari, yetarli miqdorda uxlashlari va dam olish vaqtlarini rejalashtirishlari zarur. Uyquning sifatini yaxshilash uchun sportchilar yotishdan oldin stressni kamaytiruvchi faoliyatlar bilan shug‘ullanishlari, masalan, kitob o‘qish yoki meditatsiya qilishlari mumkin. Sportchilar uchun jismoniy yuklamalardan keyin tiklanish jarayonini yaxshilash uchun stretching va yengil jig‘ish mashqlarini bajarish tavsiya etiladi. Stretching mushaklarning elastikligini oshiradi va ularning charchashini kamaytiradi. Yengil jig‘ish mashqlari esa qon aylanishini yaxshilaydi va mushaklarning tiklanish jarayonini tezlashtiradi. Sportchilar o‘z mashg‘ulotlaridan keyin stretching va yengil jig‘ish mashqlarini bajarish orqali to‘liqishni oldini olishlari mumkin. Bu jarayonlar mushaklarning bo‘shashishiga yordam beradi va ularning tiklanish jarayonini tezlashtiradi. Sportchilar uchun massaj va fizioterapiya ham muhim rol o‘ynaydi. Massaj mushaklarni bo‘shashtiradi, qon aylanishini yaxshilaydi va stressni kamaytiradi. Fizioterapiya esa sportchilarga tiklanish jarayonida yordam berishi mumkin. Sportchilarga massaj va fizioterapiya xizmatlaridan foydalanish tavsiya etiladi, bu ularning tiklanishini tezlashtiradi va to‘liqishni oldini oladi. Massajdan foydalanish, shuningdek, mushaklar va to‘qimalardagi qattiqlikni kamaytiradi, bu esa sportchilarning harakatlarini yaxshilaydi.[2]

Sportchilar uchun psixologik tiklanish ham muhimdir. Jismoniy yuklamalardan keyin sportchilar stress va charchash his qilishi mumkin. Psixologik tiklanish uchun meditatsiya, nafas olish mashqlari va boshqa stressni kamaytiruvchi usullarni qo‘llash tavsiya etiladi. Bu usullar sportchilarga ruhiy holatini yaxshilashga va tiklanish jarayonini tezlashtirishga yordam beradi. Psixologik tiklanish jarayonida sportchilar o‘z maqsadlarini aniqlashlari, o‘zlarini motivatsiya qilishlari va stressni boshqarish usullarini o‘rganishlari kerak. Sportchilarning individual ehtiyojlarini hisobga olish ham muhimdir. Har bir sportchi o‘z organizmining xususiyatlariga ega va tiklanish jarayoni har bir insonda turlicha bo‘lishi mumkin. Shuning uchun, sportchilar o‘zlariga mos keladigan tiklanish strategiyalarini tanlashlari va ularni qo‘llashlari zarur. Individual yondashuv sportchilarga samarali tiklanish va to‘liqishni oldini olish imkonini beradi. Sportchilar o‘zlarining kuchli va zaif tomonlarini tahlil qilib, o‘zlariga mos keladigan mashg‘ulotlarni tanlashlari muhimdir.[3]

Shuningdek, sportchilarga o‘z jismoniy holatlarini nazorat qilish va tahlil qilish tavsiya etiladi. Buning uchun sportchilar o‘zlarining yuklamalarini va tiklanish jarayonlarini yozib borishlari, o‘zlarining jismoniy holatlari haqida ma’lumot to‘plashlari va bu ma’lumotlarni tahlil qilishlari kerak. Bu jarayon sportchilarga o‘zlarining tiklanish jarayonini yaxshilash va to‘liqishni oldini olish uchun zarur bo‘lgan o‘zgarishlarni amalga oshirish imkonini beradi. Sportchilarda jismoniy

yuklamalardan keyin to‘liqishni oldini olish uchun bir qator strategiyalarni qo‘llash zarur. To‘g‘ri ovqatlanish, suyuqlik iste’moli, dam olish va uyqu, stretching va yengil jig‘ish mashqlari, massaj va fizioterapiya, psixologik tiklanish va individual yondashuvlar sportchilarga tiklanish jarayonini tezlashtirishga yordam beradi. Ushbu strategiyalarni qo‘llash sportchilarning umumiy salomatligi va sportdagi muvaffaqiyatini oshirishda muhim ahamiyatga ega. Natijada, sportchilarda jismoniy yuklamalardan keyin to‘liqishni oldini olish uchun kompleks yondashuv zarur. Har bir sportchi o‘zining individual ehtiyojlarini hisobga olib, tiklanish jarayonini boshqarishi kerak. Bu orqali sportchilar o‘z natijalarini yaxshilash, jarohatlardan saqlanish va umumiy salomatliklarini mustahkamlash imkoniyatiga ega bo‘ladilar. Shunday qilib, jismoniy yuklamalardan keyin to‘liqishni oldini olish sportchilarning muvaffaqiyatli faoliyatining muhim omili hisoblanadi.[4]

Sportchilarning jismoniy yuklamalardan keyin to‘liqishni oldini olish jarayonida jamoaviy yondashuv ham muhimdir. Sportchilar o‘z jamoalari bilan birgalikda mashg‘ulotlar o‘tkazishlari, bir-birlariga yordam berishlari va motivatsiya berishlari kerak. Jamoaviy ruh sportchilarning tiklanish jarayonini yaxshilaydi va ularning umumiy natijalarini oshiradi. Buning uchun sportchilar o‘zaro tajriba almashishlari, bir-birlarining muvaffaqiyatlarini nishonlashlari va bir-birlariga qo‘llab-quvvatlashlari zarur. Bundan tashqari, sportchilarga zamonaviy texnologiyalardan foydalanish tavsiya etiladi. Sportchilar o‘z jismoniy holatlarini nazorat qilish va tahlil qilish uchun turli ilovalar va qurilmalardan foydalanishlari mumkin. Bu texnologiyalar sportchilarga o‘z yuklamalarini, tiklanish jarayonlarini va ovqatlanish rejimlarini nazorat qilishda yordam beradi. Shu bilan birga, sportchilar o‘z maqsadlariga erishishda samarali strategiyalarni ishlab chiqishlari mumkin.[5]

Sportchilarda jismoniy yuklamalardan keyin to‘liqishni oldini olish uchun muhim bo‘lgan yana bir jihat — bu jarohatlardan saqlanishdir. Sportchilar o‘z mushaklari va bo‘g‘imlarini himoya qilish uchun to‘g‘ri texnikalardan foydalanishlari, mashg‘ulotlar davomida ehtiyotkorlik bilan harakat qilishlari va zarur bo‘lganda dam olishlari kerak. Jarohatlar sportchilarning tiklanish jarayonini sekinlashtirishi va ularning faoliyatini cheklashi mumkin. Shuning uchun, sportchilar o‘zlarini jarohatlardan himoya qilish va ularni oldini olish uchun zarur choralarni ko‘rishlari muhimdir.[6]

Xulosa:

Xulosa qilib aytganda, sportchilarda jismoniy yuklamalardan keyin to‘liqishni oldini olish jarayoni bir qator strategiyalarni talab etadi. To‘g‘ri ovqatlanish, suyuqlik iste’moli, dam olish, stretching, massaj, psixologik tiklanish, individual yondashuv va jamoaviy ruh bu jarayonda muhim ahamiyatga ega. Sportchilar o‘zlarining jismoniy holatlarini nazorat qilish, zamonaviy texnologiyalardan foydalanish va jarohatlardan saqlanish orqali tiklanish jarayonini samarali boshqarishlari mumkin.

Bularning barchasi sportchilarning muvaffaqiyatli faoliyatini ta’minlash va sportdagi natijalarini yaxshilashda muhim rol o‘ynaydi.

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MASOFADAN EKSKOVATOR ISHLARINI TASHKILLASHTIRISH TADQIQOTI

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Annotatsiya

Ushbu maqolada zovur va kollektorlarni qazish yoki tozalashda yuqori ish unimdorligini kafolatlashdagi hamda loyixaviy ko‘rsatkichlarini, loyixada ko‘rsatilgandek aniqlikda bajarishdagi muammolar va ularni zamonaviy innavatsion texnologiyalar yordamida bartaraf yetish chora-tadbirlari keltirilgan.

Kalit so‘zlar: yer osti sizot suvlari, zovur va kollektorlar, boshqaruv tizimi, suniy yo‘ldosh, ma’lumotlarni qabul qiluvchi antena, boshqaruvchi qurilma.

Kirish. Yerlarni meliorativ xolatini yaxshilash yuqori xosilni kafolatlash masalalari ochiq kollektor tizimlarini munta’zam va yaxshi ishlashiga bog‘liqdir. Yer osti sizot suvlarini satxini belgilangan chuqurlikda ushlab turish kollektorlarning doimiy ishlashini talab etadi.

Bugungi kunda mamlakatimizda 4,3 mln gektar sug‘oriladigan, hosildor yerlar mavjud bo‘lib ularning sizot suvlari ochiq va yepiq kollektorlar bilan doimiy (4 m ≤ h) sathdan ko‘tarlib ketmasligi ta’minlanib kelmoqda. Lekin ochiq kollektorlarning loyqa bosishi va xar hil begona o‘simliklar bilan to‘lishi juda ko‘p kuzatilmoqda. Bu esa yer osti sizot suvlarining kollektorlarga tushganida nishablik bo‘yicha harakatlanishini chegaralaydi [1].

Kollektorlarni loyqa va begona zararli o‘simliklar bosishiga quyidagi omillar sabab bo‘ladi.

-Zovur va kollektrlarni loyihalashdagi loyixaviy hatolar.

- Zovur va kollektrlarni tozalash davrida foydalaniladigan ekskovatorlar boshqaruvchilari (operatorlar) kollektorlarning loyixaviy ko‘rsatkichlarini o‘zgartirib yuborishi. Bu esa o‘z navbatida sizot suvlarining bir joyda to‘planib qolishiga, cho‘kindilarning cho‘kishiga va begona o‘simliklarning o‘sishiga qulay sharoitdir.

Bunig oqibatida quyidagi muammolar yuzaga keladi:

- Yer osti sizot suvlarining yer usti unimdor qatlamiga ilgarilashi.
- Hosildorlikning sezilarli darajada pasayishi.
- Yerlarning sho‘rlanish ko‘rsatkichlari ortishi.
- Begona o‘simliklar kollektor yuzasini butkul qoplashi.

Yuqorida keltirilgan muammolarni bartaraf etish maqsadida maqsadida ekskovatorlardan foydalaniladi.

Tadqiqot uslubiyoti. Bizga ma’lumki ekskovatorlar ishchi jixoziga harakatni ikki xil usul bilan uzatadi.

1. Mexanik (tros)

2. Gidravlik (suyuqlik)

Mexanik boshqaruv tizimiga ega ekskovatorlar (draglayn) ish unimdorligi past, yonilg‘i sarfi yuqori va zovur va kollektorlarni qazish hamda tozalashda uning gidravlik parametrlarni taminlay olish qobiliyati past.

Gidravlik boshqaruv tizimiga ega ekskovatorlar esa ish unimdorligi yuqori, ish davomiyligi t (18-22) soniyani tashkil etadi, yonilg‘i sarfi kam. Lekin bu ikki tizimning ham kamchiligi zovur va kollektorlarni qazish yoki tozalashda yuqori sifat hamda aniqlikni ta’minlab berolmaydi. Biz bundan atroflicha o‘rganib ekskovatorning gidravlik tizimini mustaqil nazorat qiladigan maxsus Topcon GPS X-35 uskunasini qo‘llashni tavsiya etamiz.

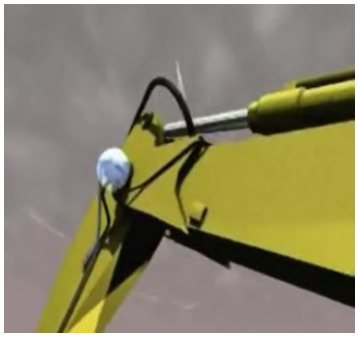
Uning ishlash prinsipi sodda ko‘rinishga ega bo‘lib dastlab qaziladigan yoki tozalanidigan zovur va kollektorlarning kompyuterda uch o‘lchamli modeli yaratiladi, keyin esa ekskovatorning gidravlik tizimini mustaqil nazorat qiladigan maxsus Topcon GPS X-35 uskunalari bilan jixozlanadi. Shunday qilib ekskovator kabiniga o‘rnatilgan sensorli monitorda aks ettirilgan soxadagina grunt ishlarini bajaradi. Buning uchun maxsus ekskovatorlar ta’lab etilmaydi.

Topcon GPS X-35 markali boshqaruv tizimini avtomatik nazorat novigatori quyidagi jixozlar tarkibiga ega (1-rasm).

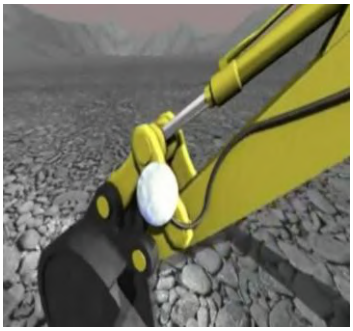
a-Ma’lumotlarni qabul qiluvchi antena

b-Boshqaruvni doimiy ko‘rsatuvchi monitor.

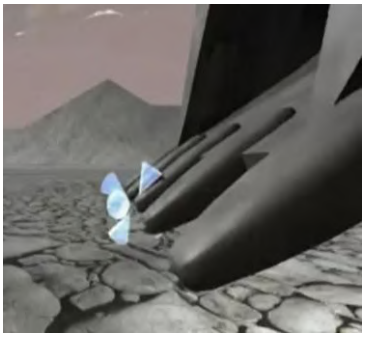
v-Xartumni xarakatini boshqaruvchi qurilma



g-Tirsakning xarakatini boshqaruvchi qurilma



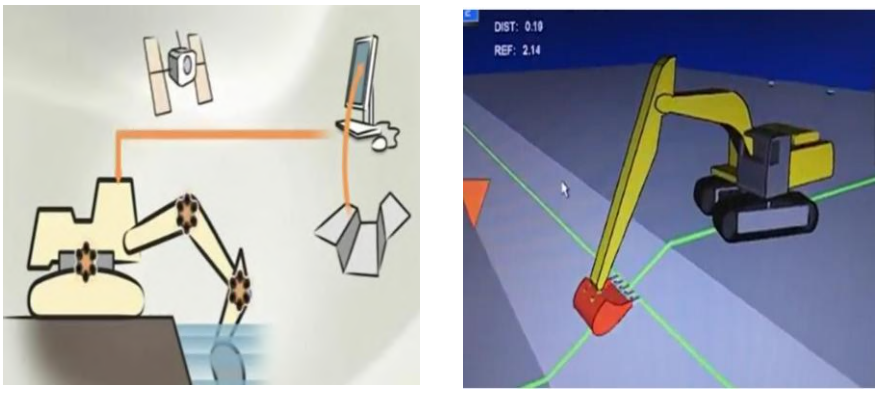
d-Cho‘michning xarakatini boshqaruvchi qurilma



ye-Cho‘michning harakat aniqligini ta’minlash

1-rasm. TOPCON GPS X-35 markali boshqaruv tizimini avtomatik nazorat novigatori quyidagi jixozlar tarkibi [3].

Natijalar. Topcon GPS X-35 markali boshqaruv tizimini avtomatik nazorat novigatori grunt ishlarini bajarish davrida bir siklda 1-2 sm xatolikka yo‘l qo‘yishi mumkin. Bundan ma’lum bo‘ladiki sikl davrida 30 sm qatlam kesib olinsa qurilma 28-32 sm qatlamni qirqadi (2-rasm). Inson omili bilan esa bu ko‘rsatkichlar 6-9 sm tashkil etadi [3].

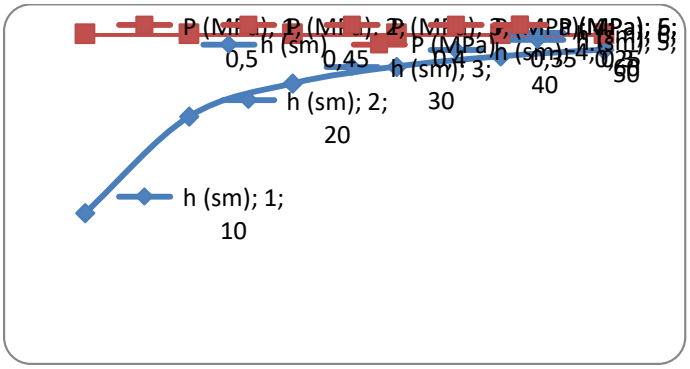


2-rasm. TOPCON GPS X-35 markali boshqaruv tizimini avtomatik nazorat novigatori ishlash ketma ketligi.

Ushbu vosita yordamida ekskovatorchi bevosita loyixada belgilangan obektdan qancha hajmdagi tuproq ishlari belgilangan bo‘lsa, shuncha hajmdagi tuproq ishini bajaradi. Undan ortiq ham kam bajarmaydi. Bundan ko‘rinadiki tuproq ishlari hajmining kamayishi, yonilg‘i-moylash materiallaridan iqtisod qilish imkoniyatini yaratadi [2].

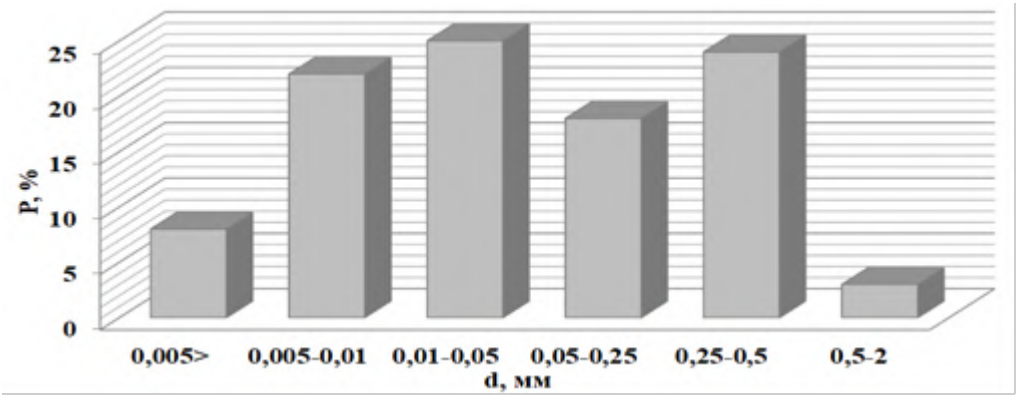
Mamlakatimizdagi “Dovsuvmaxsuspudrat” davlat unitar korxonalari yoki boshqa shu kabi tashkilotlar ekskovatorlariga kanal, zovur yoki kollektorni qazish hamda tozalashda yuuqori aniqlik va sifatga erishmoqchi bo‘lsak albatta Topcon GPS X-35 markali boshqaruv tizimini avtomatik nazorat novigatori bilan jixozlashni taklif etaman [3].

Zanjairli ekstovatorlarning kanallar va zovurlarni tozalash davrida qirg‘oqqa yaqin kelishi oqibatida zovur yon devorlarining o‘pirlishi uzaga kelishi mumkin (3-rasm)



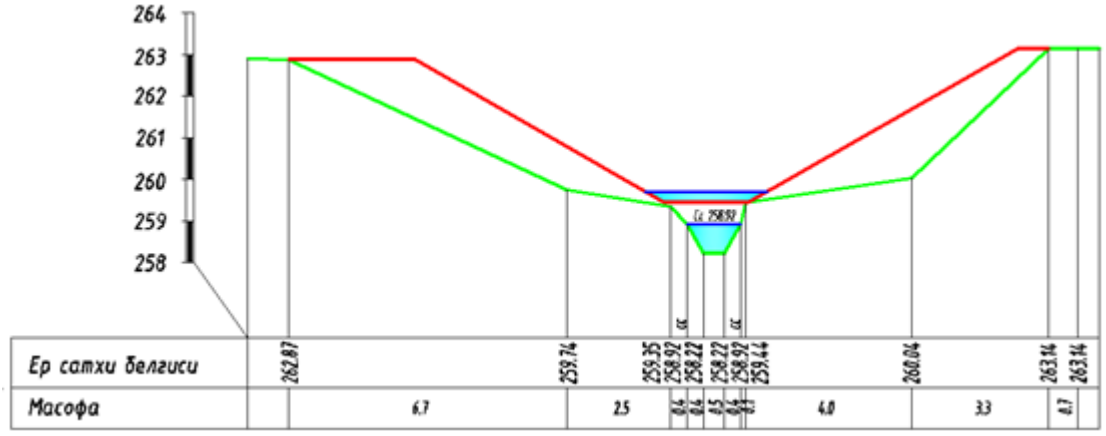
3-rasm. Zanjirli yurish uskunalarining gruntga beradigan solishtirma bosimi p (MPa) ni grunt qatlamlari h (sm) ga tasiri

Ochiq zovurda olib borilgan tadqiqotlarda ham o‘zanining 68% qismida yuvilish jarayonlari kuzatildi. Ochiq B-13-2 zovurning umumiy uzunligi 4260 m bo‘lib, 565 ga maydondan oqib keladigan yer osti sizot suvlari hamda kelib quyuluvchi zovurlardagi suvlarni ekin maydonlaridan uzoqlashtirish uchun xizmat qiladi. O‘rtacha nishabligi i=0,00215 ni tashkil etadi. Tuproq turi bo‘yicha o‘rta va yengil qumoq tuproqlardan tashkil topgan (4-rasm).



4-rasm. Ochiq zovuri o‘zani tuprog‘ining mexanik tarkibi

Olib borilgan dala tadqiqotlarida ochiq zovurning 27-stvorida, o‘zandagi suv oqimning chuqurligi h=0,65 m, suv sathi bo‘yicha kengligi V=1,10 m, ko‘ndalang kesim yuzasi ω=0,68 m^2, ho‘llangan perimetri χ=2,34 m, suv sarfi Q=215 l/s ekanligi aniqlandi. Ochiq zovurning loyihaviy parametrlarining o‘zgarishi tahlilidan, hozirgi kunga kelib o‘zanda pastga qarab 1,25 m yuvilishi jarayoni sodir bo‘lgan (5-rasm).



-loyihaviy, -mavjud holat.

5-rasm. Ochiq zovurning ko‘ndalang kesimi

Tahlil natijalariga ko‘ra ochiq zovurdagi oqim tezligi yuvilishga qarshi tezlikdan yuqori holatda ekanligi aniqlandi (5-rasm). Natijada yillar davomida ochiq zovur o‘zanida yuvilish jarayonlari sodir bo‘lib boravergan.

Ochiq zovurlarda sarf o‘zgaruvchanligini inobatga olib taklif etilgan gidravlik model va dinamik mustahkamlikni ta’minlaydigan tezlikni aniqlash formulasidan (1) foydalanib trapesiya shaklidagi o‘zan tubining kengligi quyidagicha aniqlanadi:

$$b = \left(\frac{Q}{\vartheta_{\partial.м}} - m \cdot h^2 \right) \frac{1}{h} = \frac{Q}{\vartheta_{\partial.м} \cdot h} - m \cdot h \qquad (1)$$

Gidravlik hisoblash ishlarida ochiq zovur o‘zani tubining kengligini suv sarfi o‘zgaruvchanligiga mos ravishda dinamik mustahkam oqim tezligi bo‘yicha loyihalash natijasida ochiq zovurlarning suv sarfining o‘zgarishi hisobiga quyidagi shakldagi ochiq zovur taklif etildi (5-rasm)

Xulosa. Topcon GPS X-35 markali boshqaruv tizimini avtomatik nazorat novigatori aniqlik darajasi yuqori bo‘lib bizning “keyinchalik qilinadigan” yangi (kolletorlarni tozalash, nishabligining buzilishini) oldini olishga imkon beradi. Bu taklif yuqoridagi muammolarni bartaraf etishning zamonaviy innivatsion texnologik yechimi deyish mumkin.

Zovur va kollektorlar ta’lab darajasida ishlaydi, yerlarning meliorativ xolati yaxshilanadi, hosildorlik ortadi va qo‘shimcha tuproq ishlari xajmining kamayishi xisobiga iqtisodiy samaradorlik yuqori ko‘rsatkichlarga ko‘tariladi.

Ochiq zovurlarni ekspluatatsiyasida yillar davomida qirg‘oqlari gruntining sho‘rlanish darajasi ortishida yuzaga keladigan qirg‘oq o‘pirishlari shartlari, zovur tuproq tarkibining sho‘rlanganligini inobatga olib asoslandi. Qirg‘oq o‘pirishlarini aniqlash usuli yer osti suv sathini inobatga olish tavsiya etiladi.

Olib borilgan ilmiy tadqiqotlar natijalari ochiq zovurni qurishda yer ishlari hajmining 15% kamayishiga, oqimning tashuvchanlik qobilyati 25% ortishiga erishildi. Natijada ochiq zovurlardan foydalanishda ishonchliligi oshishi va texnik holatini saqlanib qolishiga imkon yaratadi.

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ГИДРОТЕХНИК БЕТОННИНГ СУВГА ЧИДАМЛИЛИГИНИ ОШИРИШ УСУЛЛАРИ

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Annotatsiya

Мазкур мақолада гидротехник бетонларга қўйиладиган асосий талаблардан келиб чиққан холда уларнинг сув ўтказувчанлиги ва унга таьсир этадиган асоссий омиллар, уларни аниқлаш усуллари, бетон таркибида ҳосил бўладиган ғовак ва капиллярларни характери ҳамда гидротехник бетонларнинг сув ўтказувчанлигини Л2-кимёвий қўшимчасини қўллаш йўли билан ва бетондаги очиқ ғовакларни ва капиллярларни колматациялаш йўли билан камайтириш мумкинлиги асослаб берилган.

Калит сўзлар: гидротехника, бетон, сув, материал, компонент, модификация

Кириш. Гидротехника иншоотларини қуришда қўлланиладиган бетонлар оддий оғир бетонлардан фарқли ўлароқ сурункали ёки вақти-вақти билан сув таьсирида бўлади.

Гидротехника иншоотларининг ишончлиги ва хавфсизлиги жуда кўп омилларга боглик.Улардан энг асосийси гидротехника иншоотларини қуришда қўлланиладиган бетоналарнинг физик- механик ва бошқа хоссалари катта ахамиятга эга. Гидротехник бетон бошқа турдаги бетонлар каби кўп компонентли сунъий тош материали хисобланади. Демак, гидротехник бетоннинг физик-механик ва бошқа хоссаларига унинг таркибига кирувчи хар бир компонент маьлум даражада таъсир курсата олиши мумкин [1].

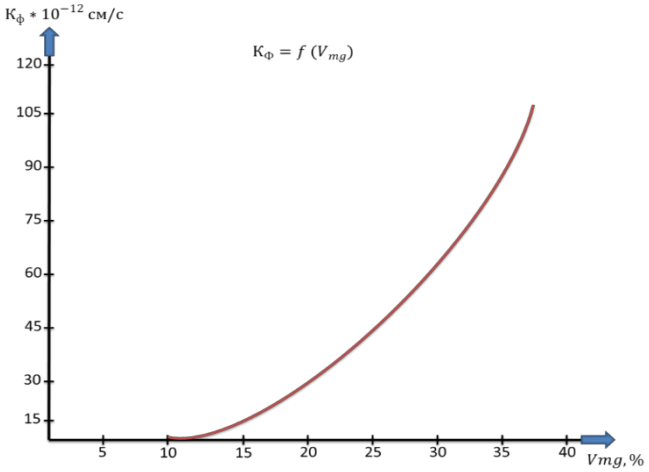
Тадқиқотлар. Ўтказилган тадқиқотлар шуни кўрсатадики, бетон таркибидаги кимёвий боғланган сувнинг миқдори цементнинг турига ва бетонинг қотиш муддатига боғлиқ ҳолда цемент массасига нисбатан 12.....16% ни ташкил этади. Ушбу кўрсаткич гидротехник бетонларда 5 дан 42% гача ўзгариши аниқланди.Гидротехник бетон таркибидаги макроғовакларга асосан қуйидаги омиллар сезиларли даражада таъсир кўрсатди: бетон қоришмасини тайерлашдаги сув цемент нисбати (С/Ц) цементни гидратацияланиш даражаси, кимёвий қўшимчаларни қўллаш ва бетон қоришмасини зичлаш даражаси. Одатда (С/Ц) нисбатини пасайиши цементни гидратацияланиш даражасини ортиши ва кимёвий қўшимчалардан оқилона фойдаланиш натижасида бетон

таркибидаги макроғоваклар миқдори бир мунча камаяди. Бу эса ўз навбатида бетонларни ўзидан сув ўтказувчанлигини камайтиради [2,3]. Бетонларнинг сув ўтказувчанлигини аниқлаш бир мунча мураккаб жараён бўлиб, уни лаборатория шароитида ёки бино ва иншоотларни эксплуатация даврида аниқланиши мумкин.

Натижалар. Булардан асосийси деб бетонларни лаборатория шароитида сув ўтказувчанлигини текшириш катта ахамият касб этади.Чунки бунда бетонни тайёрлаш жараенида бир қанча технологик чора тадбирларини қўллаб, бетонни сув ўтказувчанлигини бошқариш асосида энг мақбул бетон таркибини лойхалаш мумкин. Хозирги кунда бетонларнинг сув ўтказувчанлигини уларнинг сув ўтказувчанлик коэффициенти ($К_ф$) орқали бахолаш мумкин:

$$К_ф = \frac{Vc}{A(P1-P2)t}, \cdots (2)$$

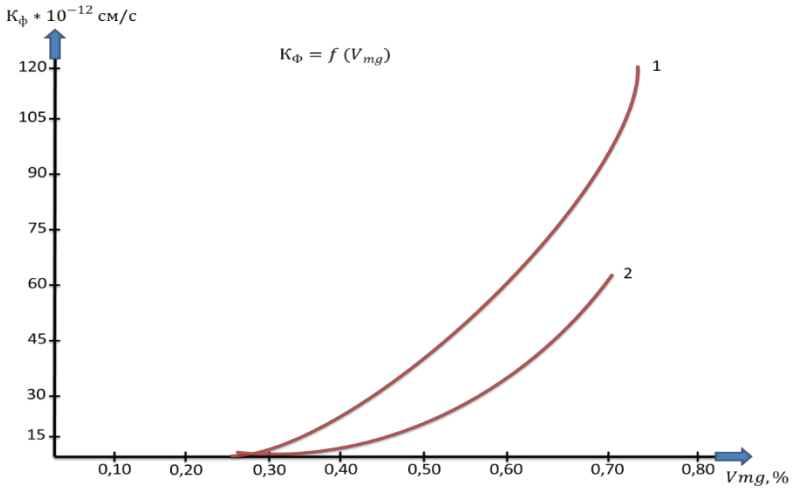
Бу ерда V_c- бетон намунаси орқали сизиб ўтадиган сувнинг миқдори; A- сувни сизиб ўтиш юзаси; P_1 –P_2- босимградиенти; t- фильтрланиш вакти.



1-расм. Бетоннинг сув ўтказиш коэффициенти ($К_Ф$) унинг таркибидаги макроғоваклар (V_{mg}) хажмига боғлиқлик графиги.

Гидротехник бетонларнинг сув ўтказувчанлигини текшириш учун асосан икки туркумдаги бетон намуналари тайёрланди. Бунда бетонларнинг мустахкамлиги ва қўзғалувчанлиги ўзгармас деб қабул қилинди. Биринчи туркум бетон намуналари кимёвий қўшимчаларсиз, иккинчи туркум бетон намуналари эса модификацияланган лигносульфонат (Л-2) қўшимчасини цемент массасига нисбатан 0.25% миқдорда қўллаш йули билан тайёрланди.Тайёрланган бетон намуналари 28 суткадан сўнг синалиб, уларнинг сув ўтказувчанлиги текширилди. Юқоридаги 1-расмда бетонларнинг сув ўтказувчанлигини уларнинг таркибидаги макроғовакларга боғлиқлиги кўрсатилди [3,4].

Бетон таркибидаги макро ғоваклар хажми жуда кўп омилларга боғлиқ бўлади [4]. Буларда энг асосийлари деб, бетон қоришмасини тайерлашдаги сув-цемент нисбатини (С/Ц) кабул килиш мумкин. Бир хил (С/Ц) нисбатига эга бўлган бетонларда хам уларнинг сув ўтказувчанлиги турлича қийматга эга бўлиши мумкин. Масалан, цемент сарфини ўзгариши, етарли даражада бетон қоришмасини зичлаш ва пластификацияловчи кимёвий қўшимчалардан оқилона фойдаланиш бетонларнинг сув ўтказувчанлигига катта таъсир кўрсатади [5]. Қуйидаги 2-расмда бетоннинг сув ўтказувчанлигига сув- цемент нисбатининг (С/Ц) таьсири кўрсатилди.



2-расм. Бетонинг сув ўтказувчанлигига сув-цемент нисбатининг тасири, $К_ф=f$(С/Ц)

Юқоридаги 2-расмдан шуни алохида таъкидлаш мумкинки, бетон коришмасини тайёрлашда сув-цемент нисбати ортиши билан бетон таркибидаги ортиқча сув миқдори нисбатан юқори бўлади.

Ушбу сув, хароратни ўзгариши ёки ташқи ва ички босимларни ўзгариши хисобига маьлум даражада буғланиб кетади. Бу эса ўз навбатида бетон таркибида нисбатан катта ўлчамли очиқ ғовакларни ва капиллярларни хосил бўлишига сабаб бўлади. Бундай холларда бетоннинг сув ўтказувчанлиги кескин ортиб кетади. Бир хил қўзғалувчанликка эга бўлган (КЧ-const) бетон коришмасини тайёрлашда пластификацияловчи Л-2 қушимчасини цемент массасига нисбатан 0.25% қўллаш йўли билан С/Ц нисбати 0.63 дан 0.51 гача туширилди ва бетонинг сув ўтказувчанлиги қарийб 3 марта камайтирилди.

Гидротехника иншоотларидаги бетонларни сув ўтказувчанлигини эксплутация даврида камайтириш учун гидротехник бетонларнинг С/Ц нисбатини пластификацияловчи Л-2кўшимчаси билан камайтирилса бундай бетонларнинг адсобцион хусусияти анча катта бўлади ва уларни колмотациялаш йўли билан бетон сувга тўйинтирилса, бетон таркибидаги очик ғоваклар ва капиллярлар энг кичик гил заррачалари билан беркилиб, уларнинг

кўпчиши хисобига капиллялардаги қоришмалар маьлум даражада зичлашади ва бетонларнинг сув ўтказувчанлиги 30-40 марта камайтирилиши мумкин [5.6].

Хулоса. Ўтказилган тажрибалар шуни кўрсатадики, бетонларнинг зичлиги катта бўлса улар оддий шароитларда ўзидан сув ўтказмайди. Лекин улар юқори босим остида бўлса, уларнинг сув ўтказмаслиги бўйича маркалари таъминлниши керак. Меьёрий хужжатларга кўра бетонларнинг сув ўтказмаслик бўйича маркалари W2 дан W12 гача қабул қилинади.

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NEMIS TILI DIALEKTLARI O'RTASIDAGI FARQLARNING SINTAKTIK TAHLILI

Saidov Zokir Zikriyoyevich

Annotasiya: Ushbu maqolada nemis tili dialektlari o’rtasidagi farqlarning sintaktik tahlili, nemis tili dialektlarining yuqori nemis tili dialekti pastki nemis tili dialekti hamda markaziy nemis tili dialektlariga bo’linishi va ularning hozirgi nemis tilida qo’llanishi hamda Hochdeutsch bilan qiyosiy tahlili haqida so’z yuritiladi.

Kalit so‘zlar: dialekt, yuqori nemis tili, pastki nemis tili, markaziy nemis tili, sintaktik, so'z tartibi.

Аннотация: В данной статье рассматривается синтаксический анализ различий между немецкими диалектами, деление немецких диалектов на верхненемецкие, нижненемецкие и центральнонемецкие диалекты, их использование в современном немецком языке, а также сравнительный анализ с Hochdeutsch.

Ключевые слова: диалект, верхненемецкий, нижненемецкий, средненемецкий, синтаксис, порядок слов.

Nemis tili, Indoyevropa til oilasiga mansub bo'lib, Germaniya, Avstriya, Shveytsariya, Belgiya va boshqa mintaqalarda keng tarqalgan. Nemis tilining asosiy xususiyatlaridan biri — uning turli dialektlarga bo'linishidir. Nemis tili dialektlari o'rtasidagi sintaktik farqlar nafaqat tilshunoslar, balki lingvistika fanining boshqa sohalarida ham muhim ahamiyatga ega. Dialektik farqlar, asosan, morfologiya, fonologiya, leksika va sintaksis sohalarida o'z aksini topadi. Ushbu maqolada, nemis tilining sintaktik farqlari tahlil qilinadi, ayniqsa, Hochdeutsch (standart nemis tili) bilan uning ayrim mintaqaviy dialektlari o'rtasidagi sintaktik farqlar ko'rib chiqiladi.

Nemis tili dialektlari

Nemis tili dialektlari asosan geografik hududlar va tarixiy rivojlanish jarayonlariga asoslanib farqlanadi. Bu dialektlar asosan quyidagi guruhlarga bo'linadi:

1. **Yuqori nemis dialektlari (Hochdeutsch)**: Germaniya janubiy va markaziy hududlarida tarqalgan. Shuningdek, bu dialektlarning standart formasi, Hochdeutsch, akademik va rasmiy tilda keng qo'llaniladi.
2. **Quyi nemis dialektlari (Niederdeutsch)**: Germaniyaning shimoliy qismlarida, xususan, Gollandiya va Daniyaaga yaqin hududlarda tarqalgan.
3. **Markaziy nemis dialektlari (Mitteldeutsch)**: Germaniya markaziy hududlarida uchraydi va yuqori hamda pastki nemis dialektlari o'rtasidagi o'rta holatni tashkil etadi.

Sintaktik farqlar

Sintaktik tahlil nemis tilining dialektik farqlarini tushunishda juda muhim o'rin tutadi, chunki sintaksis tilning tuzilishi va so'z tartibini belgilovchi asosiy qismidir. Dialektlar o'rtasidagi sintaktik farqlar quyidagi asosiy aspektlarda namoyon bo'lishi mumkin:

So'z tartibi

Standart nemis tilida (Hochdeutsch), so'z tartibi juda qat'iy va aniq qoidalar asosida qurilgan. Masalan, nemis tilida oddiy bir jumla quyidagi shaklda bo'ladi:

- **Ich gehe in die Schule.** (Men maktabga boraman.)

Biroq, ba'zi dialektlarda so'z tartibi o'zgargan bo'lishi mumkin. Misol uchun, Baaden-Vurtemberg dialektida so'z tartibi quyidagicha bo'lishi mumkin:

- **Ich gehe die Schule in.** (Men maktabga boraman.)

Bu dialektda, odatda, to'liq jumla tarkibida so'zlar joylashuvi Hochdeutsch'ga nisbatan farq qiladi.

Fe'lning o'rni

Nemis tilida, ayniqsa Hochdeutschda, fe'lning o'rni juda muhim ahamiyatga ega. Oddiy jumlada fe'l ikkinchi o'rinda turishi kerak:

- **Er isst einen Apfel.** (U olma yeydi.)

Biroq, ba'zi dialektlarda fe'l boshqa o'rinda bo'lishi mumkin. Masalan, Bavariya dialektida fe'l so'roq jumlasida oxirga o'tadi:

- **Isst er einen Apfel?** (U olma yeydimi?)

Yordamchi fe'llar

Nemis tilida yordamchi fe'llar ko'pincha predikatning tarkibiga kiradi. Standart Hochdeutschda yordamchi fe'l «haben» yoki «sein» yordamida fe'lning zamonini ifodalaydi. Masalan:

- **Ich habe gegessen.** (Men yedim.)

Ayniqsa, yuqori nemis dialektlarida (masalan, Bavariya, Baden dialektlarida) yordamchi fe'llar ba'zan o'zgarishi yoki yo'qolishi mumkin. Misol uchun:

- **I ha gegessen.** (Men yedim.)

Bu kabi holatlar, so'z tartibi va fe'lning qo'llanishiga ta'sir qiladi.

Nominal o'zgarishlar va pronominal strukturalar

Ba'zi nemis dialektlarida, xususan, yuqori nemis dialektlarida, pronominal strukturalar farq qiladi. Masalan, ko'plab dialektlarda birinchi shaxsni ifodalovchi "ich" (men) so'zi o'zgargan shaklda qo'llanadi:

- **Bavariya dialekti**: "I" (men)
- **Saarland dialekti**: "Ech" (men)

Pronominal o'zgarishlar nafaqat shaxsni, balki ko'plik va jinsi bo'yicha ham o'zgarishi mumkin.

Sifatlarning qo'llanilishi

Nemis tilida sifatlar (adjektiv) va ularning kelishigi ba'zan dialektga qarab farq qiladi. Hochdeutschda sifatlar, odatda, otlar bilan birgalikda shunday qo'llaniladi:

- **Der schnelle Hund** (Tez it)

Biroq, ba'zi dialektlarda sifatlar o'zgaradi yoki boshqacha qo'llaniladi. Misol uchun, ba'zi dialektlarda sifatni «-e» yoki «-en» shaklida ko'rsatish mumkin:

- **Der schnell Hund** (Tez it — Bavariya dialekti)

So'z birikmalarining tuzilishi

Bavariya yoki Baden dialektlarida, ayniqsa, ko'pincha so'z birikmalari yanada sodda va qisqaroq bo'lishi mumkin. Masalan, standart Hochdeutschdagi murakkab so'z birikmasi ba'zi dialektlarda qisqartirilishi mumkin:

- **Hochdeutsch**: **Die Landstraße** (Qishloq yo'li)
- **Bavariya dialekti**: **Die Landa** (Qishloq)

Nemis tili dialektlari o'rtasidagi sintaktik farqlar tilning boyligini va mintaqaviy xususiyatlarini aks ettiradi. Hochdeutsch va uning mintaqaviy dialektlari o'rtasidagi sintaktik farqlarni tahlil qilish tilshunoslik nuqtai nazaridan juda muhim. Bunday farqlar, nafaqat tilni o'rganish jarayonida, balki nemis tili va madaniyatini chuqur tushunish uchun ham zarurdir. Sintaktik tahlil yordamida nemis tilining dialektik o'zgaruvchanligini va ularning tarixiy rivojlanishini yaxshiroq anglash mumkin.

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ICHKI TURIZM

Xurshidova Nilufar Dilshod qizi
Toshkent xalqaro Kimyo unversitet, turizm manegmant,
RESEARCH METHODOLOGY fanidan talaba

Annotatsiya: Ichki turizm, ya'ni aholining o'z mamlakati ichida dam olish, biznes yoki madaniy maqsadlarda harakatlanishi, barqaror rivojlanish uchun muhim sohaga aylanmoqda. Ushbu maqolada ichki turizmning dinamikasi, foydalari va qiyinchiliklari o'rganilib, uning iqtisodiy o'sish, madaniy merosni saqlash va ijtimoiy integratsiyaga qo'shadigan hissasi haqida batafsil tahlil beriladi. Mavjud adabiyotlarni ko'rib chiqish, qo'llaniladigan usullar va ma'lumotlarga asoslangan yondashuv orqali ichki turizmni rivojlantirishga yo'naltirilgan amaliy strategiyalar yoritiladi.

Kalit so‘zlar: Ichki turizm, iqtisodiy o‘sish, madaniy merosni saqlash, barqaror rivojlanish, turizm siyosati, ijtimoiy integratsiya.

Turizm dunyo bo'ylab iqtisodiy rivojlanish va madaniy almashuvning muhim omili hisoblanadi. Xalqaro turizm katta e'tiborni jalb qilgan bo'lsa-da, ichki turizm ham shunchalik muhim rol o'ynaydi, ayniqsa madaniy va geografik xilma-xillikka ega mamlakatlarda. Ichki turizm mintaqaviy iqtisodiy o'sishni rag'batlantiradi, madaniy merosni saqlashni rag'batlantiradi va fuqarolar o'rtasidagi ijtimoiy aloqalarni mustahkamlaydi. Ushbu maqola ichki turizmning hozirgi holati, uning foydalari va duch keladigan muammolarini tahlil qilish hamda uning rivojlanishi uchun amaliy yechimlarni taklif qilishni maqsad qiladi.

Ushbu tadqiqot aralash usul yondashuvini qo'llaydi, bu sifatli va miqdoriy tadqiqot texnikalarini birlashtiradi. Ichki sayohatchilar bilan ularning afzalliklari, motivatsiyalari va to'siqlarini aniqlash uchun so'rovlar o'tkazildi. Davlat turizm boshqarmalari va sanoat hisobotlaridan olingan ikkilamchi ma'lumotlar tahlil qilinib, tendensiyalar va iqtisodiy ta'sirlar aniqlandi. Ichki turizmning muvaffaqiyatli modellari bo'lgan mamlakatlardan, masalan, Yaponiya va Hindistondan olingan holatlar eng yaxshi tajribalarni aniqlash uchun o'rganildi.

Ichki turizm mamlakat hududida yashovchi aholining boshqa viloyatlar, shaharlarga yoki qishloqlarga sayohat qilishidir. Bu turizm turi mamlakat iqtisodiyoti, madaniy aloqalar va hududlar rivojlanishi uchun muhim ahamiyatga ega. Ichki turizm quyidagi omillarni o'z ichiga oladi:

Ichki turizmning ahamiyati

1. Hududiy rivojlanish: Sayyohlik infratuzilmasining rivojlanishi, transport va xizmat ko‘rsatish tizimining yaxshilanishi.

2. Madaniy aloqalar: Turli hududlarning o‘ziga xos madaniyati va an’analarini o‘rganish, aholi o‘rtasidagi muloqotni kuchaytirish.

3. Iqtisodiy o‘sish: Ichki turizm tufayli mahalliy tadbirkorlik rivojlanadi, xizmat ko‘rsatish sohasidagi daromadlar ortadi.

4. Ijtimoiy foyda: Dam olish va sayohat orqali aholi salomatligi va psixologik holati yaxshilanadi.

Ichki turizmning asosiy turlari

- Tabiat turizmi: Tog‘lar, ko‘llar, milliy bog‘lar yoki ekologik sayohatlar.
- Tarixiy turizm: Yodgorliklar, tarixiy shaharlar va arxeologik joylarga tashriflar.
- Madaniy turizm: Festival va an’analarga bag‘ishlangan tadbirlarda qatnashish.
- Oila bilan sayohat: Dam olish maskanlari, bolalar bog‘lari yoki o‘yingohlarga tashrif.

O‘zbekiston ichki turizmi

O‘zbekistonda ichki turizm so‘nggi yillarda tez rivojlanmoqda. Bunga sabab bo‘lgan omillar:

- Boy tarixiy meros: Samarqand, Buxoro, Xiva singari shaharlardagi me'moriy obidalar.
- Tabiiy manzara: Chotqol tog‘lari, Orol dengizi, Chimgan va Beldersoy.
- Milliy festivallar: Navro‘z, Hunarmandchilik festivali va qishloq tadbirlari.

Agar ichki turizmni yanada rivojlantirish haqida o‘ylasak, quyidagilarga e’tibor qaratish zarur:

- Infratuzilma yaxshilanishi: Yashash joylari, transport va xizmatlar qulayligini oshirish.
- Reklama va axborot: Mamlakatning barcha hududlari haqida sayyohlik ma’lumotlarini keng tarqatish.
- Maxsus turizm dasturlari: Oila, yoshlar va qariyalar uchun mo‘ljallangan dasturlar ishlab chiqish.

Vazirlar Mahkamasining “O‘zbekiston bo‘ylab sayohat qil!” ichki turizm yarmarkasini tashkil etish va o‘tkazish chora-tadbirlari to‘g‘risida”gi qarori loyihasi e’lon qilindi.

Shunday tartib o‘rnatiladiki, unga muvofiq, 2024 yildan boshlab har yili “O‘zbekiston bo‘ylab sayohat qil!” ichki turizm yarmarkasi:

mart va avgust oylarida – Qoraqalpog‘iston Respublikasi, viloyatlar va Toshkent shahrida “tadbirkor bilan tadbirkor” (B2B) va “tadbirkor bilan mijoz” (B2C) mexanizmlari asosida; dekabr oyida – respublikada “tadbirkor bilan tadbirkor” (B2B) mexanizmlari asosida tashkil etiladi.

Belgilanishicha:

- yarmarka 2024 yilda Turizmni qo‘llab-quvvatlash jamg‘armasi mablag‘lari hisobidan;

- 2025 yildan boshlab yarmarka ishtirok etuvchi tadbirkorlik sub'yektlari mahalliy budjet va qonunchilik hujjatlarida taqiqlanmagan boshqa manbalar hisobidan o'tkaziladi;
- yarmarka doirasida davlat buyurtmachilariga xarid jarayoni ochiqligini ta'minlagan holda o'z xodimlari uchun O'zbekiston bo'ylab sayohatlarni tashkil qilish maqsadida eng yaxshi takliflarni tanlash natijalariga ko'ra turistik mahsulotlarni xarid qilishga ruxsat beriladi;
- yarmarka doirasida Turizm qo'mitasi tomonidan turizm sohasi sub'yektlarining faoliyatini namoyish qiluvchi tayyorlanadigan targ'ibot materiallar (foto, video va boshqalar) ijtimoiy axborotga tenglashtiriladi;
- 2025 yildan boshlab har yili 1 fevralga qadar Turizm qo'mitasi tomonidan yarmarkani tashkil etish va o'tkazish bilan bog'liq chora-tadbirlar dasturi ishlab chiqiladi;
- 2025 yildan boshlab har yili 10 fevralga qadar Turizm qo'mitasi tomonidan Yarmarkani tashkil etish va o'tkazish bilan bog'liq chora-tadbirlar dasturi Vazirlar Mahkamasi tomonidan tasdiqlanadi.

Turizm qo'mitasi:

- yarmarkalar o'tkazilishidan kamida ikki hafta oldin targ'ibot tadbirlarini tashkil qilishni;
- yarmarkalarga ichki turizm yo'nalishida faoliyat yurituvchi turoperatorlar, dam olish maskanlari, mehmonxonalar hamda transport tashkilotlarini ishtirokini;
- yarmarkalarga ishtirok etuvchi tadbirkorlarni ro'yxatini oldinda shakllantirishni;
- yarmarkalar yakunlari bo'yicha erishilgan kelishuvlar va shartnomalarni ro'yxatga olishni hamda monitoringni olib borishni;
- ommaviy axborot vositalari shu jumladan, ko'p sonli auditoriyaga ega bo'lgan blogerlarni jalb qilgan holda mamlakat bo'ylab sayohatga undovchi turli videoroliklar ishlab chiqishni ta'minlaydi.

Topilmalar ichki turizmning ko'p qirrali afzalliklarini ta'kidlaydi, ammo marketing strategiyalarining yetishmasligi, transport tarmog'ining sustligi va mavsumiy o'zgaruvchanlik kabi muammolarni ham ochib beradi. Ichki turizmni muvaffaqiyatli rivojlantirgan mamlakatlar, masalan, Xitoyning "Uyda sayohat qilish" kampaniyalari va Fransiyaning mintaqaviy turizm imtiyozlari, boshqa davlatlar uchun qimmatli saboqlar beradi. Siyosatchilar infratuzilmani rivojlantirish, aniq maqsadli marketing va davlat-xususiy sheriklik orqali to'siqlarni bartaraf etishga e'tibor qaratishlari kerak.

Xulosa

Ichki turizm barqaror rivojlanish vositasi sifatida ulkan imkoniyatlarga ega. Ushbu imkoniyatlardan foydalanish uchun quyidagi tavsiyalar taklif etiladi:

Siyosiy qo'llab-quvvatlash: Hukumatlar subsidiyalar, soliq imtiyozlari va reklama kampaniyalari orqali ichki sayohatni rag'batlantiradigan siyosatlarni ishlab chiqishlari va amalga oshirishlari kerak.

Infratuzilmani rivojlantirish: Transport, turar joy va raqamli platformalarga investitsiya qilish ichki sayohatchilar uchun qulaylikni oshiradi.

Jamoatchilik ishtiroki: Mahalliy jamoalarni turizmni rejalashtirishga jalb qilish foydalarning teng taqsimlanishini ta'minlaydi.

Xabardorlik kampaniyalari: Fuqarolarni kamroq ma'lum bo'lgan joylar haqida xabardor qilish turistik oqimlarni diversifikatsiya qilish va mashhur hududlardagi tiqilinchni kamaytirishi mumkin.

Barqarorlik amaliyotlari: Ekologik toza turizm amaliyotlarini rag'batlantirish uzoq muddatli barqarorlikni va atrof-muhitni saqlashni ta'minlashi mumkin.

Xulosa qilib aytganda, ichki turizm nafaqat barqaror soha, balki iqtisodiy va madaniy barqarorlikka erishish uchun asosiy omil hisoblanadi. Mavjud muammolarni hal qilish va strategik choralarni amalga oshirish orqali mamlakatlar ichki turizmning to'liq imkoniyatlarini ochib berishi va uning milliy rivojlanishga qo'shadigan hissasini ta'minlashi mumkin

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YURAKDA JARROHLIK AMALIYOTI O'TKAZISH JARAYONI

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Annotatsiya: Ushbu maqola yurakda kasallik kelib chiqish sabablari , klinikasi davolash, bu kasallikda zamonaviy davolash usullarini qo'llash, kerakli vaziyatlarda yurakda jarrohlik amalyoti olib borish jarayoni va bu jarayonda zamonaviy texnikalardan foydalanishga mo'ljallangan .

Abstract: This article is intended to explain the causes of heart disease, clinical treatment, the use of modern treatment methods in this disease, the process of performing heart surgery in necessary situations, and the use of modern techniques in this process.

Аннотация: Данная статья призвана описать причины заболеваний сердца, их клиническое лечение, применение современных методов лечения этого заболевания, процесс проведения операций на сердце в необходимых ситуациях, а также использование современных методик в этом процессе.

Yurak tananing eng muhim va hayotiy organlaridan biri bo'lib, qonni pompalash uchun zarur bo'lgan mushak tuzilishiga ega. Yurak mushaklari yordamida qon tanadagi barcha hujayralarga yetkaziladi. Shunday qilib, kislorod va ozuqa moddalari tanaga tashiladi. Inson salomatligi uchun hayotiy ahamiyatga ega bo'lgan bu organni yaxshi himoya qilish, tekshirish va nazorat qilish kerak.

Yurak-qon tomir jarrohligi yurak, 4 ta yirik tomirlar va boshqa qon tomir kasalliklarini davolashda qo'llaniladigan jarrohlik muolajalarni tavsiflaydi. Yurak-qon tomir jarrohligi bo'yicha mutaxassislar yurak-qon tomir tiqilib qolishlarini ochish, yurak klapanlarini almashtirish, yurak etishmovchiligi bo'lgan bemorlarda yurak klapanlarini qayta tashkil etish va boshqalar kabi jarrohlik muolajalarni amalga oshiradilar.

Yurak jarrohligi sifatida ham tanilgan, yurak yoki uning atrofidagi qon tomirlarida koronar arter kasalligi, tug'ma nuqsonlar va yurak etishmovchiligi kabi kasalliklarni davolash uchun qilingan turli xil muolajalarni anglatadi. Koronar arteriya bypass grefti (CABG) qon oqimini tiklash, shuningdek, yurak klapanlarini tiklash yoki almashtirish, tug'ma nuqsonlarni tuzatish va og'ir yurak etishmovchiligi bo'lgan bemorlarda yurak transplantatsiyasini amalga oshirish uchun ishlatiladi. Ushbu muolajalar maxsus tajriba va zamonaviy jihozlarni talab qiladi va ko'pincha ixtisoslashgan kardiologiya shifoxonalarida malakali jarrohlar tomonidan amalga oshiriladi. O'ziga xos xavf-xatarlarga qaramay, bunday operatsiyalar bemorlarning hayot sifati va prognozini sezilarli darajada yaxshilaydi, ko'pincha simptomlarni

engillashtiradi, yurak faoliyatini yaxshilaydi va umr ko'rish davomiyligini oshiradi. Bu erda biz yurak jarrohligi turlari va xavflarini o'rganamiz.

▪ Yurak klapanlarini ta'mirlash yoki almashtirish muolajalari yurak kameralari ichidagi qon oqimini nazorat qilish uchun mas'ul bo'lgan yurak klapanlariga ta'sir qiluvchi turli xil nosimmetrikliklar davolashda muhim ahamiyatga ega. Jarrohlar hayvonlar yoki inson to'qimalaridan qilingan mexanik yoki biologik almashtirishlar yordamida shikastlangan klapanlarni ehtiyotkorlik bilan tiklaydi yoki almashtiradi. Ushbu muolajalar qopqoqning to'g'ri ishlashini tiklash, samarali qon aylanishini yaxshilash va nafas qisilishi, charchoq va yurak urishi kabi qopqoq disfunktsiyasi bilan bog'liq simptomlarni kamaytirishga qaratilgan.

▪ **Anevrizmani tuzatish:** Ushbu protseduralar zaiflashgan tomirlar yoki yurak devorlarini tiklaydi, jiddiy yorilishlarning oldini oladi. Yamoqni payvandlash va endovaskulyar stentni payvandlash bu hududlarni mustahkamlash va normal qon oqimini tiklash uchun ishlatiladigan ikkita usuldir. Ushbu operatsiya yurak-qon tomir tizimining umumiy sog'lig'iga foyda keltiradigan ichki qon ketish kabi muammolar ehtimolini kamaytiradi.

▪ **Aritmiya bo'yicha jarrohlik:** Bu yurak faoliyati va hayot sifatiga salbiy ta'sir ko'rsatishi mumkin bo'lgan anormal yurak ritmlariga murojaat qiladi. Elektron yurak stimulyatori implantatsiyasi, implantatsiya qilingan kardioverter defibrilator (ICD) o'rnatilishi va labirint jarrohligi - bularning barchasi chandiq to'qimasini yurakdagi elektr zanjirlarini o'zgartirishga olib keladi, ritm barqarorligini tiklaydi va hayot uchun xavfli aritmiya xavfini kamaytiradi.

▪ **Yurak etishmovchiligini davolash:** Ular yurak faoliyati susayganlar uchun simptomlarni kamaytirishga va natijalarni yaxshilashga harakat qilishadi. Aralashuvlar yurak faoliyatini va qon aylanishini yaxshilash uchun qorincha yordamchi qurilmalari (VAD) yoki to'liq sun'iy yurak (TAH) kabi qurilmalarni joriy etishni o'z ichiga olishi mumkin. Shuningdek, yurak transplantatsiyasi jiddiy holatlar uchun davolanishni ta'minlashi mumkin, bu esa munosib nomzodlar uchun hayot sifatini sezilarli darajada oshiradi.

Yurak jarrohligi bilan bog'liq xavflar

▪ **Qon ketish va infektsiya:** Barcha ehtiyot choralariga qaramay, jarrohlik joyida qon ketish va infektsiya har qanday jarrohlik, shu jumladan yurak operatsiyalari uchun keng tarqalgan xavf hisoblanadi.

▪ **Anesteziya reaktsiyalari:** Anesteziyadan foydalanish allergik reaktsiyalardan behushlik bilan bog'liq muammolargacha bo'lgan turli xil og'riqli reaktsiyalarga olib kelishi mumkin.

▪ **Organ shikastlanishi:** Jarrohlik paytida yurak, buyraklar, jigar va o'pka kabi muhim organlar kutilmagan zarar ko'rishi mumkin.

▪ **Kontur:** Jarrohlik paytida qon oqimining buzilishi qon pıhtılarının rivojlanishiga olib kelishi mumkin, bu esa insult xavfini oshiradi.

▪ **O'lim darajasi:** Kamdan kam bo'lsa-da, yurak jarrohligi bilan bog'liq bo'lgan o'limning ozgina xavfi mavjud. Jarrohlik texnikasi va operatsiyadan keyingi yordamni yaxshilashga qaramay, bu xavf yuqori xavf ostida bo'lgan bemorlarda yoki favqulodda muolajalarda ortadi.

Hindistonda yurak jarrohligidagi yutuqlar

▪ **Ochiq yurak jarrohligi:** Ushbu standart protsedura yurakka to'g'ridan-to'g'ri kirish imkonini beruvchi ko'krak qafasidagi o'rta chiziqni kesishni o'z ichiga oladi. Jarrohlik paytida yurak bir lahzada yopilganda qon aylanishini saqlab turish uchun yurak-o'pkani aylanma apparati odatda qo'llaniladi.

▪ **Nasossiz bypass operatsiyasi:** Ba'zida "yurak urishi" operatsiyasi deb nomlanuvchi nasossiz bypass operatsiyasi yurak-o'pkani aylanib o'tish mashinasidan foydalanishni talab qilmaydi. Bu koronar arteriya bypass payvandlash (CABG) operatsiyalarining ayrim turlari uchun javob beradi.

▪ **Minimal invaziv usullar:** Transkateter aorta qopqog'ini implantatsiyasi (TAVI) kabi minimal invaziv protseduralar jarrohlik stressini va tiklanish vaqtini minimallashtirishi mumkin. Ushbu yondashuvlar kichik kesmalar va kateterga asoslangan muolajalardan foydalanadi, bu esa klapanlarni almashtirish va boshqa operatsiyalar uchun kamroq invaziv variantlarni ta'minlaydi.

▪ **Robot yordamida jarrohlik:** Robotik texnologiyalar jarrohlarga murakkab yurak operatsiyalarini aniq nazorat qilish imkonini beradi. Robot yordamida jarrohlik, ayniqsa, mitral qopqoqni almashtirish va boshqa murakkab muolajalarda epchillik va ko'rish qobiliyatini oshirish orqali muammolarni kamaytiradi va natijalarni yaxshilaydi.

▪ **Katta hajmli ixtisoslashgan shifoxonalar:** Kardiojarrohlik bo'yicha ixtisoslashgan katta hajmli shifoxonalar keng qamrovli davolanish va tajribani ta'minlaydi. Ushbu shifoxonalar zamonaviy jihozlar va tajribali xodimlarga ega bo'lib, ko'p sonli yurak kasalliklariga e'tibor qaratish va har bir bemorga individual e'tibor berish orqali eng yaxshi natijalarni taklif qiladi.

Hindistonda yurak jarrohligining o'rtacha narxi 1800 dan 6000 dollargacha, bu boshqa ko'plab mamlakatlarga qaraganda ancha arzon. Arzonroq narxga qaramay, Hindistonda kardiak bypass jarrohligining muvaffaqiyat darajasi juda yuqori, taxminan 98%. Ushbu muvaffaqiyat darajasi boshqa ko'plab mamlakatlarnikidan yuqori bo'lib, Hindistonda yurakni davolashning sifati va samaradorligini ko'rsatadi. Arzon narxlar va katta muvaffaqiyat stavkalari uyg'unligi Hindistonni yuqori sifatli kardiojarrohlik echimlarini izlayotgan har bir kishi uchun mashhur joyga aylantirdi. Jahon miqyosidagi tibbiy malakaning mavjudligi ijobiy natijalar bilan birga Hindistonni ham ichki, ham xalqaro miqyosda yurak muolajalarini izlayotgan bemorlar uchun eng yaxshi tanlovga aylantirdi.

O'ziga xos qiyinchiliklarga qaramay, yurak jarrohligi ko'pchilik uchun umid va yorqin kelajakka umid baxsh etadi. Hindistonda ko'plab kardiojarrohlik operatsiyalari

uchun omon qolish darajasi tibbiy texnologiyalar, jarrohlik texnikasi va operatsiyadan keyingi yordam rivojlanishi bilan yaxshilanmoqda. Mitral qopqoqni ta'mirlash, aorta qopqog'ini almashtirish yoki koronar arteriya bypass jarrohligi bo'lgan bemorlarga o'z yordam guruhining malakasi va yurakni davolashda sifatga sodiqligi tasalli berishi mumkin.

Foydalanilgan adabiyotlar:

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2. https://ghealth121.com/treatments/brain-hemorrhage/?lang=uz

KO’Z TO’R PARDASINI OLISH XAVFLIMI?

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Annotatsiya: Ushbu maqola ko’z to’r pardasi kasallik kelib chiqish sabablari , klinikasi davolash, bu kasallikda zamonaviy davolash usullarini qo’llash, kerakli vaziyatlarda yurakda jarrohlik amalyoti olib borish jarayoni va bu jarayonda zamonaviy texnikalardan foydalanishga mo’ljallangan .

Аннотация: Данная статья призвана описать причины заболевания сетчатки, его клиническое лечение, применение современных методов лечения при этом заболевании, процесс выполнения операций на сердце в необходимых ситуациях, а также использование современных методик в этом процессе.

Abstract: This article is intended to describe the causes of retinal disease, its clinical manifestations, treatment, the use of modern treatment methods in this disease, the process of performing heart surgery in necessary situations, and the use of modern techniques in this process.

Inson koʻzi — bu oʻziga xos fotokameraning bir turi. Unda yorugʻlik nurlari tushadigan maxsus teshik (qorachiq), ularni yoʻnaltiradigan linzalar va tasvir paydo boʻladigan toʻr parda mavjud.

Koʻz ichida 130 millionga yaqin yorugʻlikka sezgir hujayra bor. Ularga yorugʻlik tushganda darhol nerv impulsiga aylanadigan kimyoviy oʻzgarishlar roʻy beradi. Koʻrish nervi orqali u miyaning koʻrish uchun javobgar qismiga keladi. Bu yerda ushbu signal qayta ishlanadi. Shundan soʻng biz u yoki bu narsani koʻramiz.

Sog'lom ko'zda ko’z to’r pardasi tomirli qatlamga qattiq yopishadi. Ajralish ko’zning to’r qatlami tomirli qatlamdan ajralishi tufayli yuzaga keladi. Agar ko’z to’r pardasi ajralishi paydo bo'lsa, tashxis qo'yish va samarali davolanish uchun iloji boricha tezroq mutaxassisga murojaat qilish kerak. Kechikish ko'rishning to'liq yo'qolishiga olib kelishi mumkin!

Ko'pincha miopiyasi bo’lgan odamlarda ko’z to’r pardasi ajralishi aniqlanadi, ammo kasallik boshqa sabablarning natijasi ham bo'lishi mumkin: shikastlanish, gipertonik inqiroz. Har qanday yoshdagi odamlar, shu jumladan yangi tug'ilgan chaqaloqlar ushbu muammoga duch kelishlari mumkin.

- Ko'z to'r pardasi ajralishining uch turi mavjud
- To’r parda yorilishi bilan bog'liq revmatogen ajralish.
- Ko'z travmasi bilan bog'liq bo'lgan travmatik ajralish.

Ekssudativ ajralish - bu ma'lum bir ko'z kasalligi, to’r parda va tomirli qatlam o'smalari, turli xil yallig'lanish jarayonlarining natijasidir.

Ko’z to’r pardasi ajralishining odatiy belgilari: to'satdan alomatlar paydo bo'lishi. Bunday alomatlar odam tik holatda turganda kuchayadi va uyqudan keyin sezilarli yaxshilanish paydo bo'lishi mumkin, chunki bu holda ajratilgan qatlamlar orasidagi aloqa vaqtincha tiklanadi.

Ko’z to’r pardasi ajralishining noaniqligi uning og'riqsizligidadir (agar patologiya ko'zning shikastlanishi bilan bog'liq bo'lmasa, ko'zda og'riq bo’lmaydi) va jarayonning orqaga qaytarilmasligida. Shuning uchun kasallik qancha erta aniqlansa, vizual funksiyalarni to'liq tiklash imkoniyati shuncha ko'p bo'ladi.

Ko’z to’r pardasi ajralishini aniqlash uchun qanday testlarni o'tkazish kerak? Ko’z to’r pardasi ajralishini erta tashxislash terapiyani o'z vaqtida boshlashga va kasallikning natijasini yaxshilashga imkon beradi, natijada ko'rish qobiliyatini normallashtiradi. Patologiyaga shubha qilingan diagnostika doirasida majburiy tekshiruvlar doirasiga quyidagilar kiradi.

- ko'rish keskinligini tekshirish;
- perimetriyani bajarish;
- yoriq chiroqli tekshirish;

ko’z ostini davolovchi shifokori tomonidan tekshirilishi (yuqori dioptrik asferik obyektiv yoki uch oynali Goldman linzalari yordamida);

ko’z ichi bosimini o'lchash.

Tashxisni boshqa diagnostika usullaridan foydalangan holda ham aniqlashtirish mumkin. Shifokor bemor holatiga qarab ultratovush tekshiruvini va ko'zning orqa segmentini optik kogerent tomografiya tekshiruvini, lyuminestsent angiografiyani, elektroretinografiyani, KT va MRT tadqiqotlarini va boshqalarni tayinlashi mumkin.

Ko’z to’r pardasi ajralishida to’r pardaning atrofi ko'tarilishi mumkin. To’r parda noaniq bo'lib, kulrang rangga ega bo'lib, uning yuzasi gumbaz shakliga ega bo’ladi. Harakatlanganda u siljiydi. Tomirlarning yurishi to’r pardaning ajralgan yuzasi shakliga mos keladi. To’r parda chegaralari pigmentatsiyaga ega bo'lishi mumkin.

Boshqa alomatlari:

Ko’z to’r pardasi ajralishining yana bir alomati - Markus Gunn qorachig’i sindromi ham bo’lishi mumkin. Shefer simptomi 70 foiz holatidagi alomat bo’lib, ilgari ko'rish qobiliyati buzilgan va ko'zlariga jarrohlik aralashuvi bo'lmagan bemorlarda ko’z to’r pardasi ajralishi haqida ma'lumot beradi. Ko'z ichi bosimi 5 mmga kamayishi mumkin.

Foydalanilgan adabiyotlar:

1. https://med24.uz/uz/bolezn/gastrit
2. https://mymedic.uz/kasalliklar/gastroenterologiya/gastrit/
3. https://uz.yourwebdoc.com/gastritis.php

YURAK YETISHMOVCHILIGI NIMA?

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Annotatsiya: Ushbu maqola yurak yetishmovchilig kasallik kelib chiqish sabablari , klinikasi davolash, bu kasallikda zamonaviy davolash usullarini qo'llash, kerakli vaziyatlarda yurakda jarrohlik amalyoti olib borish jarayoni va bu jarayonda zamonaviy texnikalardan foydalanishga mo'ljallangan .

Абстрактный: Целью данной статьи является описание причин сердечной недостаточности, клинического лечения, применения современных методов лечения при этом заболевании, процесса выполнения операций на сердце в необходимых ситуациях и использования современных методик в этом процессе.

Abstract: This article is intended to describe the causes of heart failure, clinical treatment, the use of modern treatment methods in this disease, the process of performing heart surgery in necessary situations, and the use of modern techniques in this process.

Yurakni o‘z nasos funktsiyasini bajara olmay qolishi oqibatida a'zolarda qon aylanishini buzilishi vujudga kelishi bilan bog‘liq bo‘lgan patologik jarayon yurak yetishmovchiligi deb ataladi. Uning natijasida organizmning kislorod va oziq moddalar bilan ta'minlanishi, hamda mikrotsirkulyatsiya jarayonlarida keskin o‘zgarishlar yuz beradi. Etiologiyasi va patogenyezi. Yurak yetishmovchiligiga olib keluvchi asosiy sabablarni shartli ravishda ikkita katta guruhga (yurak va yurakdan tashqari kasalliklar) bo‘lish mumkin. Yurak kasalliklari: Yurakni ishyemik kasalligi, arterial gipyertenziya va ularni qo‘shilib kelishi, kardiomiopatiyalar (dilatatsiyali, gipyertrofiyali va ryestriktiv), orttirilgan va tug‘ma yurak nuqsonlari (aksariyat hollarda revmatizm natijasida), miokarditlar, alkogol, kokain va boshqa zaharli vositalar ta'sirida yurak mushaklarini zararlanishi, konstriktiv perikardit, infyektsiyaga bog‘liq endokardit va boshqalar. Yurakdan tashqari kasalliklar:O‘pka gipyertenziyasi bilan kechadigan nafas tizimi kasalliklari, o‘pka arteriyasi tromboemboliyasi, gipo va gipyertiryeoz, biriktiruvchi to‘qimaning diffuz kasalliklari, kamqonlik, gemoxromatoz, amiloidoz, sarkoidoz va boshqalar. Ushbu etiologik omillar yurak mushaklarini qisqaruvchanlik va qon otib berish faoliyatini buzilishi va pirovard natijada yurak yetishmovchiligi rivojlanishiga sabab bo‘ladi. Uning asosida miokardni sistolik (miokarditlar, miokard infarkti, yurak nuqsonlari va boshqalar) va diastolik (aorta ravog‘i stenozi, gipyertrofik kardiomiopatiya,

ekssudatli va konstriktiv perikardit, yurakni ryestriktiv kasalliklari va boshqalar) disfunktsiyalari yotadi.

Yuqorida qayd etib o‘tilgan omillar ko‘proq chap yoki o‘ng qorincha yoki ularni har ikkalasini zo‘riqishiga olib keladi. Chap qorinchaning zo‘riqishiga aorta o‘zanining torayishi, uzoq muddat qon bosimining yuqori bo‘lishi, mitral va aortal qopqoqchalar yetishmovchiligi, o‘ng qorinchaning zo‘riqishiga esa o‘pka arteriyasi o‘zanining torayishi, kichik qon aylanish doirasida bosimning oshishi, o‘pka arteriyasi tromboemboliyasi, uch tabaqali qopqoqchalar yetishmovchiligi sabab bo‘ladi. Har ikkala qorinchalar zo‘riqishiga esa yurakning qo‘shaloq nuqsonlari, ayrim tug‘ma nuqsonlar, yopishqoq perikardit va boshqa kasalliklar olib keladi. O‘tkir yurak yetishmovchiligidan farqli o‘laroq SYuYe nafaqat yurakni sistolik yoki diastolik faoliyati buzilishi, balki a’zo va to‘qimalarni myetabolik talabi oshganda (gipyertiryez, homiladorlik) yoki qonni kislorod tashish xususiyati pasayganda (kamqonlik) ham rivojlanadi. SYuYe patogenyezida ekstrakardial va kardial kompyensator myexanizmlar qatnashadi. Ushbu myexanizmlar yurakni nasos faoliyati buzilganda to‘qima va a’zolarni yetarli darajada qon bilan ta’minlash uchun kompyensator ravishda faollashadi, lekin keyinchalik patologik jarayonga aylanadi.

Ekstrakardial kompyensator myexanizmlarga qo‘yidagilar kiradi:

- ✓ Organizmni enyergiya sarflashini (ko‘proq mushaklarda) keskin chegaralanishi;
- ✓ Organizmni zarur darajada kislorod bilan ta’minlash maqsadida nafas olish soni va chuqurligini ryeflektor oshishi;
- ✓ Bosh miyadan yuborilgan impulslar ta’sirida yurak qisqarishlari soni va kuchini oshishi;
- ✓ Arteriolalar tonusini pasayishi natijasida yurakka tushadigan yuklamani kamayishi. Ammo ushbu ekstrakardial myexanizmlar organizmda uzoq muddat qon aylanishini monand ta’minlab turgan, ya’ni kompyensatsiya bosqichida saqlagan kardial myexanizmlar imkoniyati tugagandan so‘ng yuzaga keladi. Kardial kompyensator myexanizmlarga qo‘yidagilar kiradi:
- ✓ Yurakni gipyerfunktsiyasi;
- ✓ Yurakni u yoki bu qismini kengayishi (dilatatsiyasi);
- ✓ Yurak qismlarining gipyertrofiyasi.

Konpyensator gipyerfunktsiya deganda – yurakka tushayotgan ortiqcha yuklama uning ish bajarish faoliyatiga salbiy ta’sir ko‘rsatmaydigan holati tushuniladi. Bu jarayon yurak yetishmovchiligining ilk davrlarida gipyertrofiyaga uchramagan miokard tomonidan amalga oshirilsa, tez orada bu holat uning gipyertrofiyasiga olib keladi. Yurakning bir bo‘shlig‘idan ikkinchisiga o‘tish yo‘lida to‘siq mavjud bo‘lsa, to‘siqdan oldingi bo‘shliqda qon dimlanishi va uning kengayishi kuzatiladi. Masalan, mitral stenozda qonni chap bo‘lmachadan chap qorinchaga o‘tishini qiyinlashishi, bo‘lmachaning kengayishiga yoki aorta stenozida qonni chap

qorinchadan aortaga o‘tishini qiyinlashishi qorinchaning kengayishiga olib keladi. Agarda yurakning kengaygan qismi mushaklari o‘zining normal holatini saqlab qolsa bu kengayish konpyensator omil hisoblanadi. Chunki qisqarganiga qadar mushaklar qancha ko‘p cho‘zilgan bo‘lsa uning qisqarish kuchi shuncha yuqori bo‘ladi. Shu sababli, kengaygan yurak bo‘shliqlaridagi ortiqcha qonni otib berish imkoniyati yaratiladi. Bu o‘z navbatida bir tomondan yurakda qon dimlanishining oldini olsa, ikkinchi tomondan organizm a’zo va tuqimalarida qon aylanishini yetarli darajada ta’minlab turadi. Yurak qismlarining bunday ko‘rinishdagi kengayishi konpyensator yoki tonagen deb nomlanadi. Yurak kengaygan qismi mushaklari ish faoliyatini oshishi ularning gipyertrofiyasiga olib keladi. Bu esa o‘z navbatida mushaklarning yanada yuqori kuch bilan ishlashiga undaydi va konpyensatsiya omil hisoblanadi. Odatda tonogen dilatatsiya vaqtida yurakning sistolik hajmi oshadi. Gipyertrofiyaga uchragan miokardda deginyerativ o‘zgarishlar rivojlanishi bilan yurak bo‘shliqlarini bundan keyingi kengayishi va u bilan bog‘liq bo‘lgan mushaklarning cho‘zilishi ortiqcha enyergiya manbai bo‘lmay qoladi. Yurak bo‘shliqlarining ushbu jarayonlardan keyingi kengayishiga digenyerativ o‘zgarishlarga uchragan mushaklarning qon otib berish faoliyatining keskin kamayishi sabab bo‘ladi.

Yurak bo‘shliqlarini bunday kengayishi dimlangan yoki miogen deb ataladi va sistolik hajm kamayib boradi. Shu muddatdan boshlab kardiogen konpyensator myexanizmlarning imkoniyati tugaydi va yurak yetishmovchiligi holati yuzaga keladi. Bundan keyin yuqorida keltirilgan ekstrakardial myexanizmlarning qo‘shilishi qisqa muddatda to‘qima va a’zolarda qon aylanishini minimal darajada ta’minlab turadi. Bundan so‘ng ular tezlik bilan konpyensator ahamiyatlarini yo‘qotib boradilar va yurak faoliyatini yomonlashtiruvchi omilga aylanadilar. Masalan, bemorlarda kuzatilgan ryeflektor taxikardiya avval yurak qon otib berish hajmini oshirsa, keyinchalik diastolalar vaqtining kamayishi oqibatida uning tushib ketishiga sabab bo‘ladi. Yurak mushaklaridagi yetishmovchilik oqibatida qonning yurak va tomirlar, katta va kichik qon aylanish doirasi, arteriya va venoz tomirlar o‘rtasida mutanosib taqsimlanishining buzilishi va boshqa bir qator gemodinamik o‘zgarishlar kuzatiladi.

Foydalanilgan adabiyotlar:

1. https://bilim.tma.uz/articles/318
2. https://ghealth121.com/treatments/brain-hemorrhage/?lang=uz

NEUROPROTECTION AND NEUROINTERVENTION IN INTENSIVE CARE: STRATEGIES FOR PROTECTING NERVOUS TISSUE IN CRITICALLY ILL PATIENTS

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Abstract: The article discusses the relevance of neuroprotection in the context of resuscitation of critically ill patients. Neuroprotection is a set of strategies and methods aimed at protecting nervous tissue from damage caused by various pathological conditions and medical procedures. The article discusses pharmacological and non-pharmacological approaches to neuroprotection , as well as prospects for research in this area.

Keywords : Neuroprotection , resuscitation, critically ill patients, protection strategies, nervous tissue, pharmacological methods, non-pharmacological methods, research.

Neuroprotection is a set of strategies aimed at preventing damage to neural tissue in the critical care setting. The article discusses both pharmacological and non-pharmacological methods of neuroprotection , and their role in improving survival and reducing consequences for patients.

1. Critical ICU Patients: ICU patients often face a high risk of nerve tissue damage due to various factors such as hypoxia, ischemia, trauma, surgery, etc. This can lead to the development of serious neurological complications .

2. The importance of preserving nervous tissue: Nervous tissue is a key element of the body responsible for the functioning of the nervous system. Damage to nerve tissue can lead to serious consequences such as cognitive impairment, paralysis and even death. Therefore, protecting neural tissue is important to improve the prognosis and quality of life of patients after resuscitation.

3. Potential Neuroprotection Strategies: In recent years, considerable attention has been given to the development and investigation of various neuroprotection strategies that may help protect neural tissue during resuscitation. These strategies may include the use of pharmacological agents, the introduction of blood flow control techniques and oxygen therapy, and the use of methods to reduce body temperature.

4. Need for further research: Despite progress in the field of neuroprotection, many aspects of this problem remain insufficiently studied. Further research is needed to develop more effective and safe neuroprotection strategies that could be widely applied in critical care practice.

Thus, the topic “Neuroprotection in intensive care: strategies to protect neural tissue in critically ill patients” is relevant and important from the point of view of providing more effective care for patients in intensive care and improving their outcomes.

Okay, here's an example of a completed Materials and Methods section for your paper:

Materials and methods: Patient selection: The study included patients over 18 years of age who were in critical condition after severe trauma or a cardiovascular incident requiring resuscitation in the intensive care unit. Patient assessment: The clinical status of patients was assessed on admission and throughout treatment using the Glasgow Coma Scale (GCS) to assess consciousness and other clinical parameters to assess the severity of the condition . Monitoring methods: Neuroimaging, neurophysiological methods (eg, electroencephalography), as well as clinical methods for assessing neurological symptoms were used to assess the state of the nervous system.

Neuroprotection strategies used:

Use of pharmacological drugs: All patients were prescribed anti-inflammatory drugs, antioxidants and neuroprotectors to reduce inflammation and oxidative stress in the nervous tissue.

Non-pharmacological methods: In some cases, hypothermia therapy has been used to reduce metabolic oxygen consumption in the brain and protect nerve cells from ischemic damage.

Ethical principles: The study was conducted in accordance with the principles of the Declaration of Helsinki. All patients or their legal representatives gave informed consent to participate in the study.

Data were analyzed using SPSS software. Descriptive statistics and survival analysis methods were used to evaluate the effectiveness of the neuroprotection strategies used.

The results obtained were assessed taking into account changes in the clinical status of patients and the results of additional methods of monitoring the nervous system. The effectiveness of the applied neuroprotection strategies and their implications for resuscitation practice were discussed.

Conclusions: In this article, we discussed the relevance of neuroprotection in the context of resuscitation of critically ill patients. Our review highlighted the importance of developing and implementing neural tissue protection strategies to prevent tissue damage and reduce neurological complications in critical care practice.

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КАК ФАКТОР РИСКА НЕДОСТАТОЧНОЙ ЭФФЕКТИВНОСТИ ТЕРАПИИ. In *АКТУАЛЬНЫЕ ВОПРОСЫ МЕДИЦИНЫ КРИТИЧЕСКИХ СОСТОЯНИЙ* (pp. 59-60).

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PLASMAPHERESIS AND ITS MECHANISMS IN THE TREATMENT OF ACUTE RADICULONEUROPATHY SYNDROME: EFFECTIVENESS OF THE METHOD

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Abstract: This review examines the important role of plasmapheresis in the treatment of acute radiculoneuropathy syndrome (ARN). ORN is a neurological disease characterized by inflammation and degeneration of peripheral nerves. Plasmapheresis, as a procedure for purifying plasma from the blood, plays a key role in reducing the concentration of harmful antibodies and inflammatory mediators, which helps slow the progression of neuropathy and improve the clinical symptoms of acute respiratory failure. The potential effectiveness of plasmapheresis in the treatment of ARF is confirmed, but further research is needed to optimize its use and increase understanding of the mechanisms of action.

Key words: plasmapheresis, acute radiculoneuropathy syndrome, peripheral nerves, antibodies, inflammation, treatment effectiveness.

Acute radiculoneuropathy syndrome (ARN) is a neurological disease characterized by inflammation and degeneration of peripheral nerves. This condition can present with a variety of symptoms, including pain, numbness, weakness and paralysis. Treatment of ORN is a challenge for the medical community, and one method that is gaining attention is plasmapheresis.

Plasmapheresis is a procedure aimed at purifying plasma from the blood in order to remove harmful factors such as antibodies circulating in the blood. In the context of ORN, plasmapheresis may play a key role in reducing inflammation and suppressing the immune response that can lead to peripheral nerve damage.

The mechanism of action of plasmapheresis in acute respiratory failure is based on the removal of pathogenic antibodies and other inflammatory mediators from the blood. Reducing their concentrations in the blood can help slow the progression of neuropathy and improve clinical symptoms in patients.

Method for studying the role of plasmapheresis in the treatment of acute radiculoneuropathy syndrome: mechanisms and effectiveness.

Purpose of the study: To evaluate the effectiveness of plasmapheresis in the treatment of acute radiculoneuropathy syndrome and analyze its mechanisms of action.

Subject of the study: Patients diagnosed with acute radiculoneuropathy syndrome undergoing plasmapheresis treatment.

Material and method:

1. Patient Selection: Patients diagnosed with acute radiculoneuropathy syndrome will be selected according to clinical criteria, including symptoms and results of additional testing (eg, electromyography).

2. Grouping: Patients will be randomly divided into two groups: an experimental group that will receive plasmapheresis treatment in combination with conventional therapy, and a control group that will receive conventional treatment alone.

3. Plasmapheresis: Patients in the experimental group will undergo plasmapheresis using standard protocols and equipment.

4. Evaluate effectiveness: Clinical parameters (eg, pain level, muscle strength, range of motion) and the results of additional studies (eg, electromyography) will be assessed before treatment, after each plasmapheresis session and at the end of the course of treatment.

5. Statistical Analysis: The obtained data will be analyzed using appropriate statistical methods to compare the results between the experimental and control groups.

Expected Results: Plasmapheresis in combination with conventional therapy is expected to result in more rapid improvements in clinical parameters and electrophysiological parameters in patients with acute radiculoneuropathy syndrome compared with controls.

Conclusion The proposed research methodology will allow us to evaluate the role of plasmapheresis in the treatment of acute radiculoneuropathy syndrome and to better understand its mechanisms of action and effectiveness.

This is only an example of the study methodology, and specific details may vary depending on goals, available resources, and patient characteristics.

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COMPARATIVE ANALYSIS OF PAREMILOGICAL UNITS WITHIN PROPER NAMES IN ENGLISH AND UZBEK LANGUAGES

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Abstract: This article shows that both English and Uzbek are very rich languages. They both have a lot of deeply meaningful proverbs, parables. Among them we can find many proverbs that contain different proper names. Many of them originated centuries ago and are still preserved and used today, but some of them are new proverbs that have emerged from the modern environment, the way people live. Not all of the proverbs that come with proper names are widely used in the language, because they have different meanings in terms of sense, articles that represent exactly the everyday lifestyle are used more in practice, and are remembered. But some of them we rarely use because they are proverbs that are far from the usual way of life.

Key words: Proverbs, tradition, proper names, culture, comparison.

Аннотация: В этой статье показано, что английский и узбекский языки очень богаты. У них обоих есть много глубоко содержательных пословиц, притч. Среди них можно найти множество пословиц, содержащих разные имена собственные. Многие из них возникли столетия назад и до сих пор сохраняются и используются, но некоторые из них представляют собой новые пословицы, возникшие из современной среды, образа жизни людей. Не все пословицы, имеющие имена собственные, широко используются в языке, поскольку имеют разное по смыслу значение, пословицы, отражающие именно повседневный образ жизни, больше используются на практике, и запоминаются. Но некоторые из них мы используем редко, поскольку эти пословицы, далекие от обычного образа жизни.

Ключевые слова: Пословицы, традиция, имена собственные, культура, сравнение.

Proverbs are generally defined as "narrow and pithy sayings expressing commonly held ideas and beliefs." Folk literature is associated with proverbs. Their origins are mostly based on oral tradition. Many generations have used proverbs to improve the clarity and persuasiveness of their speeches. Every country has its own ideas and traditions, which are reflected in proverbs. On the other hand, there are many proverbs that are universal and have translations in various languages.

Throughout my research, I have learned that a proverb that comes with a proper name in one language can come without a proper name in another language, but they are semantically similar to each other. But I have witnessed another case where some

proverbs have no equivalent, the main reason being the cultures of the countries where these two languages are used. Below I will try to compare and interpret the meanings of such articles in English and Uzbek:

1.**Hamal kirdi - amal kirdi**. ” Hamal” means –the month of March. It is said in this proverb that, from the beginning of March farmers start to plant crops, trees and plants on their grounds, people plan to do many projects and begin to build houses for themselves. We can come across this kind of proverb in English language, too:

Spring is in the air. It means spring is the season of new beginnings.

Every year many of us look forward to March as it’s the first month of Spring. Farmers begin to plant crops on their land and we see colorful flowers blooming, leaves start to grow in hedges and trees and we come alive after a long-wilted winter.

Here we can catch similar meanings in these two proverbs, but in the first proverb we can see the proper noun (Hamal), but in the second proverb there is no a proper name. The names of seasons are not considered as proper names.

2. East, West home is best. It means wherever we go, we can not find the place like our homes. The sides of the world are accepted as proper names, so they are always capitalized.

Uzbek language also includes this very proverb, but in another version. Here is not used any proper names:

O’z uying o’lan to’shaging. It also means the same meaning as this English proverb- there is no place like home.

3. Rome was not built in a day. It is said to mean that it takes a long time to do a job or task properly, and you should not rush it or expect to do it quickly. In this proverb “Rome” is a proper name, because it is the name of a city.

In Uzbek language it is said as:

Sabrning tagi sariq oltin. It means the people who wants to get good results should not hurry, they should be patient and do everything step by step.

But here we can not see a proper name.

4. Savr kirdi — ekinlarga davr kirdi. Savr is the month of April. It is an old Uzbek proverb, which includes a proper name. If we interpret the proverb it means that April is a spring month in which rain pours very often, and it affects very well to the plants and corn.

English people say this proverb in another way, they have an equivalent which means the same as Uzbek proverb. And one point to highlight is that both proverbs possess proper names (Savr, April,May) and the same interpretation.

April shower bring May flowers. It is a common saying, which are mostly said in the month of April. The month of April is traditionally rainy. As temperatures rise, the last bit of snow melts and turns to rain, and increased rain shower activity triggers the beginning of flowers and plants to truly bloom.

5. Every day is not Sunday. This proverb is about lazy people who do not like working. It is necessary to work. One cannot spend every day having fun. Sunday is a day of the week, so it is a proper name.

In Uzbek language we have also many proverbs about laziness, but now I want to show one of them which is similar to this English proverb in terms of meaning. This proverb does not include a proper name, but it is similar to it according to its meaning.

Bekor chidan xudo bezor. It is about the person who does not like to work, and spends his/her time with doing nothing. No one likes these sorts of people, because they do not help others and waste their precious time.

6. Jack is no judge on Jill's beauty. It means that lovers are blind to each other's faults. It is a famous English proverb, which contains two proper names(Jack, Jill).

In Uzbekistan we have also this very proverb which is very common among people. It does not contain any proper names, but its meaning is the same as the English proverb.

Sevgining ko'zi ko'r. From this it can be seen that lovers love each other knowingly each other's shortcomings, accept each other with their shortcomings, and faults. That is why such a proverb has appeared among the people.

7. March comes in like a lion and goes out like a lamb. This proverb refers to the fact that the weather is very cold at the beginning of March but warms up at the end. It's also acceptable to say "in like a lion and out like a lamb." It's a more concise way of saying the same thing.In this proverb "March" is name of the spring month, so it is a proper name.

Uzbek paremiology also has such kind of saying, which encompasses tha same sense. It also includes a proper nam –Mart(March).

Mart qorda boshlanadi va ko'katlar bilan tugaydi. It is said here that at the beginning of March the weather is cold and it may even snow, at the end of the month the temperature of the weather becomes warm and the trees and plants bloom and blossom.

Here we can notice that both proverbs in two different languages include the same proper name, and means also the same.

8. Navro'zdan so'ng qish bo'lmas, Mizondan son'g yoz bo'lmas.

If we translate this old Uzbek proverb literally, it is translated as: Winter does not come after Navruz, summer does not come after Mizon. Navruz is a national holiday which is celebrated in spring, and Mizon is the old name of the month of October. If we interperet the proverb according to its sense, every thing happens at its own time, we can not change it.

English people say this proverb in another form. They express this meaning more simply, and do not use any proper name.

Everything has its own time. Everything happens on time, not before, not after. We cannot do anything before its time until its time has come.

9.All work and no play makes Jack a dull boy. It is an English proverb which includes name of a person (Jack) . It means working without having rest and relaxation, makes people to get tired and become dull. Each person needs time for rest during any working process, it affects well to the productive working hours and good results.

In Uzbek Language we have another variant of this proverb. It does not include a proper name, but the same according to the meaning.

Yaxshi dam – mehnatga hamdam. It is clear from this proverb that if a person rests during the process of labor, he will have a good result of labor and will not get tired quickly. If , on the contrary, he works without rest all day long, he quickly becomes tired, nervous and unable to achieve good results.

10. An Englishman's home is his castle. It is said to mean that people have the right to do what they want in their own home, and that other people or the state have no right to interfere in people's private lives. It is an old British proverb, that contains the proper name –Engilshman.

In Uzbek language we can express this idea by this proverb:

O'z uyingda poshshodirsan. If we translate this proverb, it means: "You are the king in your house". It means that everyone feels free in his/her own home, do whatever they want, but they can't behave in that way when they go to someone else's house.From these two proverbs we can know that both of them are the same in the sense of meaning, but they have different forms. English version includes a proper name and the Uzbek one does not.

Conclusion. Proverbs are widely believed to play an important role in language education as part of the acquisition of cultural knowledge, figurative understanding and communication skills. Proverbs are part of all languages and cultures. Proverbs have been used from ancient times to modern times to spread knowledge, wisdom, and truth about life. They are considered an important part of raising children because they show moral values and encourage them to act together.

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KORXONALARDA KASSA OPERATSIYALARINI HISOBGA OLISHNING O'ZIGA HOS HUSUSIYATLARI

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Annotatsiya. Maqola korxonalarda kassa operasiyalarini hisobga olishning zaruriyatlarini yoritib berish va uning o'ziga xos xususiyatlarini o'rganishga bag'ishlangan. Maqolada kassa orderlarini olish vaqtida kassir:

– ularda buxgalteriya hisobi va moliyaviy boshqarish vazifalarini amalga oshiruvchi shaxsning imzosi borligini, kassa chiqim orderida esa korxona rahbari yoki vakolatli shaxsning ruxsat berganligi haqidagi imzosi mavjudligini;

– hujjatlarning to'g'ri rasmiylashtirilganligini;

– hujjatlarda qayd etilgan ilovalarning mavjudligini tekshirishi shart ekanligi kabi masalalar yoritib berilgan.

Kalit so'zlar: pul mablag'lari, naqd pul, kassa, bank hisobvaraqlari, pul hujjatlari, to'g'ri hisobga olish, to'liq hisobga olish, o'z vaqtida hisobga olish, kassa orderlar, kassa kirim orderi, kassa chiqim orderi, kirim va chiqim kassa hujjatlarini ro'yxatga olish jurnali, kassa daftari, istalgan qismi, to'lovlilik alomatlari belgilanishiga ta'sir etadigan darajada teshilgan, yirtilgan, siyqalangan joylari, dog'lari bo'lgan, siyohda yozilgan, buxgalteriya hisobi, moliyaviy boshqarish, kassir tomonidan imzolangan.

Аннотация. Статья посвящена выяснению необходимости учета кассовых операций на предприятиях и изучению его особенностей. В статье кассир в момент приема кассовых ордеров:

- имеют подпись лица, осуществляющего бухгалтерский учет и управление финансами, а расходный ордер - подпись руководителя предприятия или уполномоченного лица о том, что он дал разрешение;

- что документы надлежащим образом оформлены;

- уточняются такие вопросы, как необходимость проверки наличия заявлений, упомянутых в документах.

Ключевые слова: средства, наличные деньги, денежные средства, банковские счета, кассовые документы, правильный учет, полный учет, своевременный учет, кассовые ордера, кассовый ордер, кассовый ордер, кассовый ордер, чек и журнал регистрации кассовых поступлений, кассовая

книга, любая часть, с дырками, слезы, потертости, пятна, написанное тушью, бухгалтерский учет счет, финансовый менеджмент, подпись кассира.

Abstract. The article is devoted to clarifying the need for accounting of cash transactions at enterprises and studying its features. In the article, the cashier at the time of accepting cash orders:

- have the signature of the person performing accounting and financial management, and the disbursement order - the signature of the head of the enterprise or an authorized person that he has given permission;

- that the documents are properly executed;

- such issues as the need to check the presence of applications mentioned in the documents are clarified.

Keywords: funds, cash, cash, bank accounts, cash documents, correct accounting, full accounting, timely accounting, cash orders, cash order, cash order, cash order, check and cash receipts register, cash book, any part, with holes, tears, abrasions, stains, written in ink, accounting account, financial management, cashier's signature.

Korxonalarning pul mablag‘lari naqd pul shaklida kassada, bank hisobvaraqlarida pul hujjatlari shaklida, berilgan akkreditivlarda va ochiq maxsus hisobvaraqlarda, chek daftarchalarida va boshqalarda saqlanadi.

Pul mablag‘lari buxgalteriya hisobining asosiy vazifalari:

– ushbu mablag‘lar va ularning harakati bo‘yicha operatsiyalarni to‘g‘ri, to‘liq va o‘zvaqtida hisobga olish;

– pul mablag‘lari va pul hujjatlarining mavjudligi, ularning xavfsizligi va maqsadliishlatilishini nazorat qilish;

– kassa, hisob-kitob va to‘lov intizomiga rioya etilishini nazorat qilish; mablag‘lardanyanada oqilona foydalanish imkoniyatlarini aniqlash.

Kassa orderlari va ularning kvitantsiyalari korxona buxgalteriyasi tomonidan siyohyoki sharikli ruchka bilan aniq yozilishi yoki kompyuterda yozilishi shart. Ushbu hujjatlargao‘chirib yozish, tuzatishlar kiritish va izohlar yozishiga yo‘l qo‘yilmaydi.

Kassa orderida uni tuzish uchun asos va unga ilova qilingan hujjatlar ko‘rsatiladi. Pullarni kassa orderlari bo‘yicha qabul qilish va topshirish ular to‘ldirilgan kuni amalga oshirilishi lozim.

Kassa orderlarini olish vaqtida kassir:

–ularda buxgalteriya hisobi va moliyaviy boshqarish vazifalarini amalga oshiruvchi shaxsning imzosi borligini, kassa chiqim orderida esa korxona rahbari yoki vakolatli shaxsning ruxsat berganligi haqidagi imzosi mavjudligini;

– hujjatlarning to‘g‘ri rasmiylashtirilganligini;

– hujjatlarda qayd etilgan ilovalarning mavjudligini tekshirishi shart.

1-jadval

Kassa operatsiyalarini hisobga olish bo‘yicha birlamchi ro‘yxatga olish hujjatlarining shakllari

Shakl raqami	Shaklning nomi	Qo‘llash tartibi
KO-1	Kassa kirim orderi	Korxona kassasiga naqd pul tushganligini ro‘yxatga olish uchun
KO-2	Kassa chiqim orderi	Korxona kassasidan naqd pul berishni ro‘yxatdan o‘tkazish uchun
KO-3	Kirim va chiqim kassa hujjatlarini ro‘yxatga olish jurnali	Kirim va chiqim kassa orderlarini yoki ularni o‘rnini bosuvchi hujjatlarni hisobga olish yo‘li bilan ro‘yxatdan o‘tkazish uchun
KO-4	Kassa daftari	Korxonaning kassadagi naqd pul kirimi va chiqimlarini hisobga olish uchun
KO-5	Kassir tomonidan qabul qilingan va berilgan naqd pullar hisobi kitobi	Kassir tomonidan korxonaning kassasidan boshqa kassirlar yoki vakolatli shaxsga (pul tarqatuvchiga) berilgan pul mablag‘larini hisobga olish, shuningdek amalga oshirilgan operatsiyalar bo‘yicha kassaga qaytarilgan naqd pullar va kassa hujjatlarini qaytarishni hisobga olish

Ushbu talablarga rioya qilinmagan bo‘lsa, kassir hujjatlarni belgilangan tartibda rasmiylashtirish uchun buxgalteriyaga qaytaradi.

Kassa orderlari asosida pul olingan yoki pul berilganidan keyin kassir ularni imzolaydi hamda ularga ilova qilingan hujjatlar ustiga berilgan sanani va «To‘landi» yoki «Kirim qilindi» deb yozib qo‘yadi yoki shtamp bosadi.

Kassa orderlari kassaga topshirilguniga qadar korxona buxgalteriyasi tomonidan tegishli ravishda mazkur “Yuridik shaxslar tomonidan kassa operatsiyalarini amalga oshirish Qoidalari”ning 2-ilovasiga muvofiq shakldagi Kassa kirim orderlarini qayd etish daftari yoki mazkur Qoidalarning 3-ilovasiga muvofiq shakldagi “Kassa chiqim orderlarini qayd etish daftari”da ro‘yxatga olinadi.

Ish haqini to‘lashga doir to‘lov qaydnomalariga rasmiylashtirilgan kassa chiqim orderlariu to‘langanidan so‘ng ro‘yxatga olinadi.

Kassa operatsiyalarini amalga oshirish uchun asos bo‘lgan hujjatlar buxgalteriya bo‘limiga topshiriladi, unda xodimlar rasmiy vazifalariga muvofiq:

– hujjatlarni rasmiylashtirishining to‘g‘riligini, ularning amaldagi qonunchilikka va amalga oshirilgan operatsiyalarning tavsifiga muvofiqligini, shuningdek, korxona rahbari yoki xo‘jalik operatsiyalari bo‘yicha vakolatli shaxslarning zarur yozma ko‘rsatmalarining mavjudligini tekshiradilar;

– kassa kirim va chiqim orderlari yoki ularning o‘rnini bosuvchi hujjatlarni rasmiylashtiradilar;

– kassa hujjatlarining shakllari bo‘yicha vakolatli shaxslarning zarur imzolarini oladilar;

– kirim va chiqim kassa hujjatlarini qayd qilish jurnalida (kassaga topshirishdan oldin)

ro‘yxatdan o‘tkazadilar (shakl №. KO-3);

– kassaga kirim va chiqim kassa orderlarini yoki ularni o‘rnini bosuvchi hujjatlarni ulargailova qilingan tasdiqlovchi va farmoyish hujjatlar bilan birga o‘tkazadilar.

Kirim kassa orderi va ularning kvitantsiyalari bir vaqtning o‘zida to‘ldiriladi va korxonarahbarining yozma farmoyishi bilan bosh hisobchi yoki bunga vakolatli shaxs tomonidan imzolanadi. Kassa kirim orderi kvitantsiyasini faqat pulni olganidan so‘ng beriladi.

Chiqim kassa orderini korxona rahbari va bosh hisobchi yoki unga vakolatli shaxs imzolaydi.

Ish haqi to‘lov qaydnomasi va boshqa unga teng to‘lovlar asosida rasmiylashtirilgan kassa chiqim orderlari, ular berilgandan so‘ng, qayd qilinadi.

Kirim va chiqim kassa hujjatlarini ro‘yxatdan o‘tkazish kompyuter texnikasidan foydalangan holda amalga oshirilishi mumkin. Shu bilan birga, tegishli kun uchun tuzilgan “Kirim va chiqim kassa orderlari qayd qilish jurnalining ilova varag‘i” mashinogrammadaham pul oqimlarini maqsadga muvofiq hisobga olish bo‘yicha ma’lumotlar shakllantiriladi.

Kassa orderlari bo‘yicha pul mablag‘larini qabul qilish va chiqarish faqat ularni tuzish kunidagina amalga oshirilishi mumkin.

Kirim va chiqim kassa orderlari yoki ularni o‘rnini bosuvchi boshqa hujjatlarni pul topshiruvchi yoki oluvchi shaxslar qo‘liga berish ta’qiqlanadi.

Kassaga naqd pul qabul qilish. Yuqoridagi barcha talablarga rioya qilgan va hujjatlarning to‘g‘ri rasmiylashtirgan holda, kassir naqd pul qabul qiladi. Naqd pul qabul qilish vaqtida kassir O‘zR Markaziy banki tomonidan

tasdiqlangan “Yuridik shaxslar tomonidan kassa operatsiyalarini amalga oshirish Qoidalari”ga muvofiq, ularning to‘lov qobiliyatini tekshiradi.

Korxonalar tomonidan haqiqiyligi shubhalantirmaydigan va ular qiymatini belgilaydigan so‘zlari, O‘zK Davlat gerbining tasviri, seriyasi va raqamlari to‘liq saqlangan banknotlar, ular umumiy o‘lchamining 55 foizi mavjud bo‘lsa hamda shikastlanish darajasidan qat’i nazar, to‘liq hajmini va yuz tomonida qiymat tasvirini saqlagan metall tangalar to‘lovga qabul qilinadi.

Korxonalar:

– istalgan qismi, jumladan to‘lovlilik alomatlari belgilanishiga ta’sir etadigan darajada teshilgan, yirtilgan, siyqalangan joylari, dog‘lari bo‘lgan, siyohda yozilgan;

– ayrim qismlari shak-shubhasiz bitta biletga tegishli bo‘lgan yirtilgan va elimlangan;

– qiymatini ko‘rsatadigan raqamlar, yozuvlar bo‘lgan qismlardan tashqari, o‘z rangini o‘zgartirgan, kuygan (ko‘proq kuygan);

– to‘liq hajmini saqlamagan banknotlarni to‘lovga qabul qilishi va pul tushumi tarkibida banklarga topshirishi lozim.

Ushbu talablarga muvofiq kelmaydigan banknotlar va tangalar to‘lovga yaroqsiz hisoblanadi va banklar tomonidan ekspertizaga qabul qilinadi.

Korxonalar kassasiga naqd pullar buxgalteriya hisobi va moliyaviy boshqarish vazifalarini amalga oshiruvchi shaxsning imzosi qo‘yilgan kassa kirim orderi bo‘yicha qabul qilinadi. Naqd pul qabul qilinganda buxgalteriya hisobi va moliyaviy boshqarish vazifalarini amalga oshiruvchi shaxs hamda kassir tomonidan imzolangan, kassir muhri (shtampi) bilan tasdiqlangan kassa kirim orderi yoki kassa apparatining izi tushirilgan chipta (slip) pul topshirgan shaxsga beriladi.

Kassir tomonidan qabul qilingan naqd pul summasi kirim kassa orderida ko‘rsatilgan summaga mos kelishi kerak.

Pulni olgandan so‘ng kassir kvitantsiyani imzolaydi va o‘z familiyasi, ismi va otasining ismini yozadi, kassirning muhri (shtampi) bilan tasdiqlaydi. Bosh hisobchi va vakolatli shaxs va kassir tomonidan imzolangan va kassirning muhri (shtamp) yoki kassa apparati izi bilan tasdiqlangan kirim kassa orderi kvitantsiyasi pul o‘tkazgan shaxs qo‘liga topshiriladi.

Kirim yoki chiqim kassa orderlari yoki ularni o‘rnini bosuvchi hujjatlar bo‘yicha pul olingandan yoki chiqarilgandan keyin darhol kassir tomonidan imzolanadi va ularga ilova qilingan hujjatlarga sana (kun, oy, yil) ko‘rsatilgan holda “To‘langan” deb shtamp bosiladi yoki qo‘l yozuvi bilan ko‘rsatadi.

Kassa kirim orderlari bilan tasdiqlanmagan naqd pullar kassadagi ortiqcha pul hisoblanib,korxona daromadiga kirim qilinadi.

Kassadan naqd pul chiqimi. Korxona kassasidan naqd pullarni chiqim qilish korxona rekvizitlari tushirilgan to‘rtburchak shtamp bosilgan va belgilangan tartibda rasmiylashtirilgan kassa chiqim orderi yoki to‘lov qaydnomasi asosida amalga oshiriladi. Kassadan naqd pul berish uchun rasmiylashtiriladigan hujjatlarga korxona rahbari va buxgalteriya hisobi va moliyaviy boshqarish vazifalarini amalga oshiruvchi shaxs imzo qo‘yishi shart.

Kassa chiqim orderiga ilova qilinadigan hujjatlarga (arizalar, to‘lov qaydnomalari va boshqa to‘lov hujjatlariga) korxona rahbari tomonidan rozilik imzosi qo‘yilganda, kassa chiqim orderiga korxona rahbarining imzosi qo‘yilishi talab etilmaydi.

Byudjet korxonalari buxgalteriyasida beriladigan ish haqining umumiy summasiga bir nusxada kassa chiqim orderi tuzilib, uning sanasi va tartib raqami har bir to‘lov qaydnomasigayozib qo‘yilishi shart.

Alohida shaxsga kassa chiqim orderi bilan pul berilganda, kassir pul oluvchining shaxsini tasdiqlovchi hujjatini (pasport, yashash guvohnomasi, harbiy xizmatchilar uchun harbiy bilet) talab qilib, hujjatning turi, seriyasi va tartib raqami, uning qaysi korxona tomonidan va qachon berilganligini kassa chiqim orderiga qayd etib qo‘yishi lozim.

To‘lov qaydnomasi tuzilgan hollarda pul oluvchilar o‘z shaxsini tasdiqlovchi hujjatini taqdim etadi va uning tegishli joyiga imzo qo‘yadi.

Korxona kassasidan naqd pulni chiqim qilish mazkur korxona tomonidan xodimga berilgan hujjatga (guvohnomaga) asosan amalga oshiriladi.

Korxonaga fuqarolik-huquqiy shartnoma asosida ishga jalb qilingan shaxslarga naqd pullar alohida to‘lov qaydnomasi yoki har bir shaxsga alohida kassa chiqim orderi orqali beriladi.

Naqd pullar kassa chiqim orderida yoki ishonchnomada ko‘rsatilgan shaxsga beriladi. Naqd pullar kassa chiqim orderi bo‘yicha ishonchnoma asosida berilayotgan bo‘lsa, kassa chiqim orderiga ishonchnomada ko‘rsatilgan shaxsning familiyasi, ismi va otasining ismi yoziladi. Naqd pullar to‘lov qaydnomasi bo‘yicha ishonchnoma asosida berilayotgan bo‘lsa,to‘lov qaydnomasiga «Ishonchnoma asosida» deb yozib qo‘yiladi. Ishonchnoma kassirda qoladi va kassa chiqim orderi yoki to‘lov qaydnomasiga ilova qilinadi.

Ish haqi, vaqtincha mehnatga layoqatsizlik nafaqalari, stipendiyalar, pensiya va mukofotlar to‘lov qaydnomasi bo‘yicha to‘langanda, har bir shaxsga alohida kassa chiqim orderi to‘ldirilmaydi. Bunda to‘lov qaydnomasining titul varag‘iga korxona rahbari hamda buxgalteriya hisobi va

moliyaviy boshqarish vazifalarini amalga oshiruvchi shaxsning imzosi qo‘yiladi va pul berishga ruxsat etilganligi to‘g‘risidagi yozuv, pullarni tarqatish muddati hamda summasi ko‘rsatiladi.

Xodim ta’tilga ketganda, vaqtincha mehnatga layoqatsiz bo‘lganda va shu kabi boshqa hollarda mehnatga haq to‘lash, shuningdek deponentga o‘tkazilgan summalarni va xizmat safari xarajatlarini bir necha xodimga berish to‘lov qaydnomasi bo‘yicha amalga oshirilishi mumkin.

Muayyan shaxslar uchun bir marotaba beriladigan pullar chiqim kassa orderlari bo‘yichaamalga oshiriladi.

Ish haqi, vaqtincha mehnatga layoqatsizlik nafaqalari, stipendiyalar, pensiya va mukofotlar uchun olingan naqd pullar tarqatilmay qolgan hollarda, kassir tomonidan naqd pullarni

saqlashda quyidagilar amalga oshiriladi:

– har bir shaxsning familiyasi ro‘parasiga «deponentga o‘tkazilgan» deb yozib qo‘yishi(shtamp bosishi);

– deponentga o‘tkazilgan summalar bo‘yicha reestr tuzishi;

– to‘lov qaydnomasi oxirida amalda to‘langan summa haqida va deponentga olingan summani yozib qo‘yishi, ushbu summalarni to‘lov qaydnomasi bo‘yicha umumiy yakun bilan solishtirishi va o‘z imzosi bilan tasdiqlashi;

– amalda to‘langan summani mazkur “Yuridik shaxslar tomonidan kassa operatsiyalarini amalga oshirish Qoidalari”ning 1-ilovasiga muvofiq shakldagi kassa daftariga yozishi va to‘lov qaydnomasiga kassa chiqim orderining raqami va to‘rtburchakshtampini bosishi lozim.

Buxgalteriya xodimlari to‘lov qaydnomalaridagi yozuvlarni tekshiradi hamda ularbo‘yicha berilgan va deponentga o‘tkazilgan summalarning to‘g‘ri aks ettirilganligininazorat qiladi.

Deponentga o‘tkazilgan summalar bankka qaytarib topshiriladi va ular bo‘yicha bittaumumiy kassa chiqim orderi tuziladi.

Hisobvaraq 5000 “Kassadagi pul mablag‘larini hisobga oluvchi hisobvaraqlar”ga yozuvqilish uchun asos bo‘lib kassir hisoboti xizmat qiladi.

Buxgalteriya hisobida kassa operatsiyalarini hisobga olish uchun maxsus registrlar: jurnal-order № 1 kassa hisobvarag‘ini kredit operatsiyalari va qaydnoma № 1 debet operatsiyalarini hisobga oladi. Ushbu registrlar buxgalteriya dasturi 1C-Buxgalteriyada hamqo‘llaniladi.

Jurnal-order № 1 va qaydnoma № 1 ni to‘ldirish uchun kassirning hisobotlari asos bo‘lib xizmat qiladi. Reestrda har bir hisobotga, kassa hisoboti tuzilgan muddatdan qat’iy nazar, bitta satr beriladi. Jurnalda band qilingan satrlar soni kassir tomonidan topshirilgan hisobotlar soniga mos kelishi kerak. Biroq, kassa hujjatlari kam bo‘lgan holda, kassirning birnecha

hisobotiga ko‘ra, registrlarda har kuni emas, balki 3-5 kun davomida operatsiyalarni qayd etishga ruxsat etiladi. Bu holda “sana” ustunida yozuvlar qilinadigan dastlabki va oxirgiraqamlar ko‘rsatiladi, masalan: 1-3, 15-17 va hokazo.

Bog‘lanadigan (korrespondentlanadigan) hisobvaraqlari bo‘yicha kun (bir nechakun) natijalari kassa hisobotida yoki unga ilova qilingan hujjatlarda aks ettirilgan bir xil operatsiyalar summalarini hisobga olish yo‘li bilan, buxgalteriya yozuvlariga (o‘tkazma) ko‘ra, ilgari kassir hisobotida yoki hujjatlarda tushirilgan holda belgilanadi.

Naqd pul qoldig‘i faqat oyning boshida va oxirida qaydnomada ko‘rsatiladi. Oy davomida nazorat va operativ maqsadlarda kassir hisobotlarida ko‘rsatilgan mablag‘lar qoldig‘i to‘g‘risidagi ma’lumotlardan foydalaniladi.

Kassa inventarizatsiyasi. Korxona kassasida har chorakda kamida bir marta taftish o‘tkazilib, kassadagi barcha naqd pul va boshqa qimmatliklar birma-bir qayta sanalib,tekshirilishi shart.

Kassada taftish o‘tkazish uchun korxona rahbarining buyrug‘i bilan komissiya tuzila- di. Mazkur komissiya tomonidan o‘tkazilgan taftish natijalari bo‘yicha ikki nusxada dalolatnoma tuzadi. Komissiya a’zolari kassadagi naqd pullar, qimmatli qog‘ozlar va boshqaqimmatliklarni birma-bir to‘liq qayta sanash yo‘li bilan tekshiradi.

Dalolatnoma inventarizatsiya (tekshirish) o‘tkazish komissiyasi a’zolari hamda moddiy javobgar shaxs tomonidan imzolanadi. Dalolatnomaning bir nusxasi korxona buxgalteriyasiga topshiriladi, ikkinchi nusxasi moddiy javobgar shaxsda qoladi.

Inventarizatsiyani (tekshirishni) boshlashdan oldin har bir moddiy javobgar shaxs(lar) dan tilxat olinadi. Moddiy javobgar shaxslar almashganda, dalolatnoma uch nusxada tuziladi, bir nusxasi naqd pul va boshqa qimmatliklarni topshirgan moddiy javobgar shaxsga, ikkinchinusxasi naqd pul va boshqa qimmatliklarni qabul qilib olgan moddiy javobgar shaxsga, uchinchi nusxasi korxona buxgalteriyasiga topshiriladi.

– Kassa daftari elektron (dasturiy) tarzda yuritiladigan korxonalarda kassa hujjatlariga ishlov berish tizimining to‘g‘ri yuritilishi tekshirib turilishi shart.

Foydalanilgan adabiyotlar ro’yxati:

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LINESTICS THINKING BASED ON AN INTEGRATIVE-CREATIVE APPROACH

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ABSTRACT

This paper explores the development of linguistic thinking through integrative-creative approaches, emphasizing the significance of innovative methodologies in modern language education. The study examines key methods, including the integrative approach, creative writing, cognitive strategies, game-based learning, and multimedia technologies, highlighting their strengths and limitations. International best practices such as CLIL, Freewriting, and Gamification are analyzed for their relevance and adaptability to Uzbekistan's education system. The findings suggest that while each method contributes uniquely to linguistic thinking development, a blended approach tailored to Uzbekistan's context can yield the best results. The discussion underscores the need for systemic reforms, infrastructure investments, and teacher training to overcome existing challenges and fully harness the potential of these innovative methods.

Keywords: Linguistic thinking, integrative approach, creative writing, cognitive strategies, game-based learning, multimedia technologies, innovative methodologies, language education

INTRODUCTION

The education policy of the President of the Republic of Uzbekistan focuses on innovative development and strengthening scientific potential within society. In particular, the tasks outlined in the "Concept for the Development of the Education System of the Republic of Uzbekistan until 2030" are aimed at fostering innovative and creative approaches [1]. This document emphasizes the importance of employing modern and integrative-creative methods in language teaching.

Moreover, the "New Uzbekistan Strategy" underscores the necessity of enhancing linguistic capacity and improving the quality of education through the development of linguistic thinking [2]. In this context, enriching national education systems with creative and innovative approaches to developing linguistic thinking has become a pressing issue.

In global practice, significant scientific approaches to developing linguistic thinking have been established. For instance, Vygotsky's theory on the use of creative thinking and integrative methodologies in the learning process plays a crucial role in this field [3]. Vygotsky noted that the development of language and thinking are

intrinsically linked, and fostering them together enhances an individual's cognitive capacity [4].

Local and foreign sources highlight the importance of introducing creative approaches to the educational process through research on linguistic thinking. Additionally, it has been demonstrated that improving communicative competence can enhance the quality of education [5, 6]. Developing linguistic thinking based on integrative-creative approaches is a vital aspect of modern education, as it involves not only linguistics but also integration with other disciplines [7].

Among other important studies in linguistics, Chomsky examines the interconnection between linguistic structures and human cognition. His generative grammar theory underscores the importance of developing linguistic ability and creative thinking together [8]. In this regard, linguistic thinking evolves in harmony with an individual’s ability to generate speech. Saussure, on the other hand, elaborates on the interrelation between language and society within a linguistic context, highlighting the need to unify linguistic thinking and social influence [9].

Recent research has provided significant scientific insights into the development of linguistic thinking through communicative approaches. For example, Halliday studies the functional aspects of speech, explaining how linguistic thinking aids in understanding human activities [10]. He emphasizes the connection between semantic and syntactic aspects of language and cognitive processes. The effectiveness of interactive technologies in enhancing students' linguistic abilities has also been emphasized [11].

From a psychological perspective, Gardner’s theory of multiple intelligences illustrates the close relationship between linguistic thinking and other intellectual faculties. This theory highlights the importance of using creative approaches and comprehensive methods to develop linguistic ability [12].

The role of software and technology in language learning has also significantly increased. Corpus linguistics research facilitates deeper exploration of linguistic thinking through technological means. The works of McEnery and Wilson play a central role in this area [13].

One of the critical aspects of the integrative approach is the emphasis on the harmony between language and culture. The Sapir-Whorf hypothesis investigates the relationship between linguistic thinking and culture [14]. Additionally, Hymes' communicative competence theory is particularly important in linking linguistic thinking with practice [15].

Further studies expand on these ideas. Johnson emphasizes the relationship between skill learning and language pedagogy [16]. Ellis provides a comprehensive analysis of second language acquisition processes and how they relate to linguistic thinking [17]. Lightbown and Spada explore the cognitive and psychological underpinnings of language learning, shedding light on how linguistic thinking

develops over time [18]. Larsen-Freeman highlights the significance of employing diverse teaching techniques to foster creativity in linguistic contexts [19]. Harmer focuses on practical approaches to teaching, integrating creativity and interactivity into linguistic pedagogy [20].

Nation delves into vocabulary acquisition, exploring its relationship with linguistic thinking and broader communicative competence [21]. Thornbury complements this with insights into effective vocabulary teaching strategies, emphasizing their role in fostering linguistic creativity [22]. Nunan introduces task-based teaching methodologies as a way to integrate creativity into language learning [23]. Skehan's cognitive approach further investigates how mental processes underpin linguistic skill development [24]. Swain addresses the importance of comprehensible input and output in developing communicative and linguistic competence [25].

Schmidt's research on attention and awareness highlights how linguistic thinking is influenced by cognitive focus during learning [26]. VanPatten examines input processing as a mechanism for understanding grammar and developing linguistic competence, reinforcing the role of integrative approaches in language learning [27].

METHODS

This article is dedicated to exploring various methods for developing linguistic thinking based on an integrative-creative approach. The methodological section highlights advanced methods, analyzing their strengths and weaknesses with examples from international practices.

Integrative Approach Method. This method focuses on combining theory and practice in linguistic thinking development. The primary goal is to teach learners to use language not just theoretically but also in real-life situations. This approach helps learners understand language within broader contexts, including culture and history. Its strengths include practical effectiveness and the integration of linguistic knowledge with intercultural skills. However, it demands more time and resources. Internationally, the "Content and Language Integrated Learning (CLIL)" method is widely used. It incorporates language teaching into other subjects, such as science or history, fostering interdisciplinary skills and understanding, especially prominent in European countries.

Creative Writing Method. This approach emphasizes developing linguistic thinking through creative writing, encouraging learners to express their thoughts in written form. It facilitates a deeper understanding and mastery of language while fostering creativity. Strengths include promoting critical thinking and written communication skills. However, challenges include selecting appropriate creative topics and its varying effectiveness among students. In Japan, the "Freewriting"

technique is a notable application of this method, motivating students to write freely without restrictions.

Cognitive Approach Method. This method links language learning with cognitive processes, focusing on grammatical and semantic aspects of language. It enhances analytical thinking and deepens understanding through linguistic analysis. Strengths include providing a scientifically grounded approach to language acquisition and fostering analytical thinking. Weaknesses involve a theoretical focus and potential restrictions on creativity. In Germany, the "Cognitive Grammar" approach is widely applied, serving as an effective tool for linguistic analysis.

Game-Based Language Learning Method. Using games to teach language increases learners' interest and encourages active learning. The key advantage of this method is its ability to boost motivation and facilitate easier comprehension of complex linguistic concepts through games. However, the development of sufficiently complex educational games can be challenging, and the method may lack depth in fostering academic knowledge. In South Korea, "Gamification" has proven effective in language teaching programs, increasing learner engagement.

Teaching with Multimedia Technologies. Leveraging modern multimedia technologies introduces an innovative approach to language learning. It enables faster and more effective acquisition of language through audio-visual materials. Strengths include accelerated learning and exposure to global cultures. Weaknesses involve dependence on technology and insufficient infrastructure. In Canada, "Interactive Whiteboards" and "Virtual Reality" are widely utilized, demonstrating significant efficacy in language teaching (Tab.1).

Table 1

Comparative Analysis Table of Methods

Method Name	Strengths	Weaknesses	International Practice
Integrative Approach Method	Practical effectiveness, intercultural connections	Time and resource-intensive	CLIL (Europe)
Creative Writing Method	Develops creativity and written communication skills	Difficult topic selection, variable effectiveness	Freewriting (Japan)
Cognitive Approach Method	Scientifically grounded, fosters analytical thinking	Theoretical focus, limits on creativity	Cognitive Grammar (Germany)
Game-Based Language Learning	Boosts motivation, facilitates comprehension through games	Limited depth in academic knowledge, complexity in game creation	Gamification (South Korea)

Method Name	Strengths	Weaknesses	International Practice
Multimedia-Based Teaching	Accelerates learning, promotes cultural exposure	Dependence on technology, lack of infrastructure	Interactive Whiteboards, VR (Canada)

The integration of these methods presents a holistic approach to developing linguistic thinking. Each method offers unique advantages that address different aspects of language learning. For instance, the integrative approach enhances practical application, while creative writing fosters imagination and self-expression. Cognitive methods provide depth through analysis, whereas game-based learning and multimedia technologies boost engagement and make learning dynamic. Drawing from international practices like CLIL, Freewriting, and Gamification, educators can adopt a balanced and innovative framework to ensure comprehensive development in linguistic thinking.

RESULTS

The analysis highlights the distinct roles of integrative-creative approaches in developing linguistic thinking. Each method demonstrates unique advantages in addressing specific aspects of language learning, while also revealing potential limitations that must be considered for successful implementation.

The integrative approach emerged as a powerful method for enhancing practical language skills and cultural awareness. It effectively connects theoretical linguistic knowledge with real-world application, enabling learners to understand the broader context of language use, including cultural, historical, and social dimensions. However, this approach is resource-intensive, requiring interdisciplinary materials and highly trained educators capable of navigating diverse subject areas alongside language teaching.

Creative writing methods showed great promise in fostering creativity and linguistic depth. These methods enable learners to express themselves more freely, enhancing their ability to think critically and articulate complex ideas. Despite these strengths, creative writing can be challenging to implement, particularly in education systems that prioritize structured, rote-based methods. Additionally, students with limited engagement or creativity may find these activities less effective, requiring supplementary strategies to support their learning.

Cognitive approaches proved to be especially beneficial for developing analytical thinking skills and in-depth linguistic analysis. By focusing on the grammatical and semantic aspects of language, these methods provide a scientifically grounded framework for language acquisition. However, they are primarily theoretical in nature and may lack the engaging elements necessary for younger learners or those less inclined toward abstract thinking.

Game-based learning emerged as a highly engaging method, particularly effective for motivating younger students. It introduces an element of fun and competition, making the learning process more dynamic and accessible. However, designing games that maintain educational depth and align with curriculum goals is a complex and resource-intensive task. This method also requires adequate access to technology and trained educators who can effectively integrate games into the teaching process.

Multimedia technologies, such as interactive whiteboards, virtual reality, and online learning platforms, demonstrated significant potential for accelerating language acquisition and enhancing engagement. These tools offer learners diverse ways to interact with language content, making it easier to retain and apply knowledge. However, their reliance on technological infrastructure and the digital literacy of educators presents a barrier, particularly in regions with uneven access to advanced educational technologies.

DISCUSSION

In the context of Uzbekistan's educational system, these methods present varying degrees of suitability and applicability. The integrative approach, for example, aligns well with the country's ongoing education reforms aimed at modernizing teaching methodologies. Efforts to incorporate interdisciplinary learning through frameworks similar to CLIL (Content and Language Integrated Learning) could enhance linguistic thinking while promoting cross-disciplinary skills. However, a lack of resources, such as specialized training for educators and interdisciplinary materials, remains a significant obstacle.

Creative writing methods have substantial potential to contribute to Uzbekistan's goal of fostering critical thinking among students. This approach encourages learners to move beyond rote memorization and engage in deeper exploration of linguistic and conceptual ideas. For these methods to succeed, however, educators must be trained in student-centered teaching techniques, and curricula must be adapted to allow more flexibility and creativity.

Cognitive methods align particularly well with Uzbekistan's traditional focus on structured and grammar-based learning. These methods can serve as a foundation for linguistic thinking development, particularly in secondary and higher education, where students are accustomed to rigorous theoretical approaches. To maximize the impact of this method, educators should complement it with more engaging and interactive techniques, such as multimedia and game-based learning.

Game-based learning has immense potential for primary education in Uzbekistan. Younger learners are naturally inclined to respond positively to games, making this method highly effective for teaching basic linguistic concepts. Integrating gamification into language education could help reduce the monotony of traditional methods while boosting students' motivation and retention. However, for this

approach to be effective, the government and educational institutions must invest in creating localized educational games and providing the necessary technological infrastructure.

Multimedia technologies are increasingly relevant as Uzbekistan advances in its digital transformation agenda. Interactive tools such as virtual reality and online platforms can provide engaging and immersive experiences that are particularly effective for language learning. However, the uneven distribution of technological resources across urban and rural schools poses a significant challenge. Addressing this gap through targeted infrastructure investments and teacher training programs is essential for widespread adoption.

CONCLUSION

Uzbekistan is well-positioned to integrate global best practices in linguistic thinking development by adopting a blended methodological framework. Cognitive methods can serve as a strong theoretical foundation, supported by creative, integrative, and game-based approaches to ensure a well-rounded language learning experience. Multimedia technologies can act as a catalyst for modernizing education, provided that challenges related to infrastructure and teacher training are adequately addressed. By fostering interdisciplinary skills, critical thinking, and engagement through innovative methods, Uzbekistan can align its education system with international standards, empowering students with the linguistic and analytical skills needed to thrive in a globalized world.

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PEDAGOGICAL PROBLEMS OF ORGANIZING THE COMPUTER-BASED TEACHING PROCESS IN EDUCATION

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Annotation: In the period of rapid development of modern information technologies,multimedia technologies are of great importance in increasing the effectiveness of the educational process. Therefore, this article focuses on the pedagogical problems of organizing the computer-based teaching process in education.

Key words: Information technologies, pedagogy, internet, e-mail, video, audio, television, computer, multimedia, animation, sound, hypertext.

Introduction

Today, the introduction of new information technologies accelerates the implementation of the possibilities and requirements of students through com- puters, taking a sharp step into the future. That's why it is necessary to conduct researches in order to create new teaching methods that increase the level of know-ledge and creative ability of students, and create conditions for rapid mastery of the computer today.

If we look at the concept of "Technology", it is "a set of methods of processing raw materials, materials or semi-finished products, changing their shape and properties, carried out during the production process. The task of technology as a science is to determine the most effective production process in practice and to determine the physical, chemical, mechanical and other laws for its use. Computer technology of education is a set of methods and tools for creating pedagogical working conditions based on computer equipment, telecommunication devices and interactive software products that simulate some functions of the teacher, such as displaying, transmitting, collecting and managing information.

Literature analysis and methods

There is no doubt that the use of information technology in the structure of the lesson has a significant impact on the use of different methods and forms in teaching. Some researchers consider educational technologies as "a method of implementing the educational content provided for in educational programs, a system of educational forms, methods and tools that ensure the most effective achievement of goals" [1].

Multimedia technologies have proven their effectiveness in school education. Multimedia with various means of information exchange with interactivity provides a new level of educational quality. Along with the development of modern computer technical tools, the visual environment of multimedia is also changing rapidly. The widespread use of three-dimensional graphics adapts the metaphor of hypertext

flipbooks in the traditional e-textbook to an interactive learning environment. The three-dimensional world of knowledge is perceived by the student through the monitor screen, images of real objects work together with virtual models. The main conditions for the use of modern information technologies in the process of educating students are: the use of computers as a modern tool, increasing students' interactive impact between the teacher and the computer, wide use of information technologies, implementation at the expense of students' independent education. Regulation of the educational process in modern information technologies is based on the use of software-creative projects. V.V. Knyazeva defines pedagogical conditions as "a set of measures, objective possibilities, content, forms, methods of a specific environment that accompany the educational process, are specially structured and aimed at successfully achieving a pedagogical goal or solving research problems"[2]

Results and discussion

The structure of information culture is aimed at developing students' cognitive functions. This is done by: stimulating the mental activity of students, determining the goals of learning the educational material and directing students to the interactive environment of the computer, developing and expanding the teacher's ability to self-study based on the deepening of technologies.

The following main methodological features of forming students with modern knowledge can be suggested:

1) the use of multimedia presentations in classes, automated educational systems, the operation of various programs is carried out with the help of video recordings;

2) In practical work, each student should be allocated a separate computer, create a separate folder there, write the student's last name, first name, class and encrypt it;

3) Wide use of individual training programs, correct use of multi-level assignment databases (in practical and laboratory work);

4) Performing a significant part of work in the form of work games according to the purpose;

5) It is necessary to use the project method that preserves the principles of consistency on a large scale, that is, one global task is systematically performed, supplemented and expanded in all practical (laboratory) and graphic work, becoming a closed system;

6) It is necessary to take into account in advance the possibility of studying the main sections of the program in parallel, it is necessary to create an opportunity for students to get in-depth knowledge of each section;

7) It is necessary to rely on the following interrelated positions: recognition motivation, comprehensive acceptance, systematic - information analysis;

8) Wider use of the problem-based method of teaching, it is necessary to take into account in advance the processing of specific programs (documents, tables, databases) used in the learning process;

The use of multimedia technologies in education has the following advantages over traditional teaching:

- allows the use of colorful graphics, animation, sound effects, hypertext;
- the possibility of constant updating;
- interactive web - the possibility of placing elements, for example, tests or workbooks;
- hyperlinks to additional literature from electronic libraries or educational sites.

Conclusion

Organizing lectures using multimedia technologies allows you to save time. The influence of "Informatics" subject on the interest of students is so great that they can create a learning environment through games from their thoughts. The use of multimedia technologies (projectors) in lessons allows not only visual presentation of the curriculum, but also saves time. At the moment, additional demands are placed on the preparation of multimedia materials and the organization of classes.

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NUKLEOTIDLAR KETMA-KETLIGINI ANALIZ QILISH VA TAXRIRLASH

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Annotatsiya. Ushbu maqolada nukleotidlar ketma-ketligi, biologik molekulalar, xususan, DNK va RNK sekvensiyalari keng yoritib berilgan. Bu jarayonda genom tahlili, genetik tekshiruvlar, mutatsiyalarni aniqlash va yangi dori vositalarini ishlab chiqishda keng qo'llanilishi, genetik kasalliklarni tashxislash va genetik modifikatsiya qilish haqida ma'lumotlar berilgan.

Kalit so'zlar: nukleotid, sekvenlash, genom, Sanger metodi bo'yicha skrining qilish, yangi avlod skriningi (NGS), uchinchi avlod skriningi.

АНАЛИЗ И ИНТЕРПРЕТАЦИЯ НУКЛЕОТИДНЫХ ПОСЛЕДОВАТЕЛЬНОСТЕЙ

Аннотация. В этой статье подробно рассматриваются нуклеотидные последовательности, секвенирование биологических молекул, особенно ДНК и РНК. Этот процесс включает анализ генома, генетическое тестирование, обнаружение мутаций и их широкое использование при разработке новых лекарств, а также диагностику генетических заболеваний и генетическую модификацию.

Ключевые слова: нуклеотид, секвенирование, геном, секвенирование по Сэнгеру, секвенирование следующего поколения (NGS), секвенирование третьего поколения.

ANALYSIS AND INTERPRETATION OF NUCLEOTIDE SEQUENCES

Annotation. This article provides extensive coverage of nucleotide sequences, biological molecules, specifically DNA and RNA sequences. The process includes extensive use in genome analysis, genetic testing, mutation detection, and new drug development, and diagnosis and genetic modification of genetic disorders.

Keywords: nucleotide, sequencing, genome, Sanger sequencing, Next-Generation sequencing (NGS), Third-Generation sequencing.

Nuklein kislotalar barcha tirik organizmlarning genetik ma’lumotlarini saqlaydigan molekulalardir va ularning asosiy turlari DNK va RNKdir. Har bir nukleotid uch asosiy qismdan tashkil topadi: **azotli asos**, shakar (**pentoz**) molekulasi, va **fosfat guruhi**. DNKda azotli asoslar **adenin** (A), **guanin** (G), **sitozin** (C) va **timin** (T) bo’lsa, RNKda timin o’rniga **urasil** (U) bo’ladi. Bu asoslarning ma’lum ketmaketligi genetik kodni belgilaydi. DNK ikkita spiral ko’rinishidagi polinukleotid zanjiridan iborat bo’lib, bu struktura genetik ma’lumotni ko’chirish va saqlashni osonlashtiradi. RNK esa odatda bitta zanjirdan iborat va DNKdan ko’chirilgan ma’lumotni ribosomalar orqali oqsil sinteziga o’zgartirishda ishtirok etadi. Nuklein kislotalarning o’ziga xos ketma-ketligi organizmning rivojlanishi, ishlashi va irsiy belgilarini belgilashda muhim rol o’ynaydi [1].

Nukleotidlar ketma-ketligini aniqlash usullarining tarixi o’tgan asrning o’rtalariga borib taqaladi va dastlab oddiy kimyoviy reaksiyalar orqali o’rganishlar amalga oshirilgan. 1953-yilda DNKning ikki spiral ko’rinishi Jeyms Watson va Frensis Krik tomonidan kashf etilganidan so’ng, ilmiy dunyo uchun genetik ma’lumotni tushunish yo’lida yangi eshiklar ochildi. Dastlabki yillarda sekvenlash juda qiyin va sekin jarayon bo’lgan, ko’pincha nuklein kislotalarni kimyoviy reaksiyalar yordamida parchalash va keyinroq ularni tahlil qilish orqali bajarilgan [2]. 1965-yilda Aroene Berg va Bob Gall DNK ning polimeraza fermenti yordamida sintez jarayonini tadqiq qila boshladilar. Bu dastlabki tadqiqotlar DNK va RNK ketma-ketligini aniqlash texnikalariga yo’l ochdi. O’sha davrda oqsil sekvenlash texnologiyalari rivojlanib borar ekan, DNK sekvenlash ham tez orada ilmiy hamjamiyat uchun qulay va samarali usulga aylanadi [3].

Sanger sekvenlash usuli ketma-ketlikda dideoksinukleotidlar yordamida DNK zanjirini sintez qilish prinsipiga asoslangan. **Dideoksinukleotidlar** DNK sintezi jarayonini to’xtatish qobiliyatiga ega bo’lib, ularni ma’lum bir joyda qo’llash orqali DNK fragmentlarini hosil qilish mumkin. Keyin hosil qilingan DNK fragmentlari elektrofrez orqali ajratiladi va ketma-ketlik aniqlanadi. Sanger sekvenlash kichik genomlarga ega organizmlarni o’rganish uchun mos keladi, ammo yirik genomlarni tahlil qilishda vaqt va xarajat talab qiladi. Ushbu texnologiya genetik tadqiqotlar, tibbiy diagnostika va ma’lum genlarning mutatsiyalarini aniqlashda keng qo’llaniladi. Bundan tashqari, ushbu usul eng ishonchli va aniq DNK ketma-ketligini aniqlash metodlaridan biri hisoblanadi [4].

NGS texnologiyasi DNK ni qisqa fragmentlarga bo’lib, bir vaqtda ko’p miqdorda ketma-ketliklarni aniqlash imkoniyatini beradi. Ushbu usul yirik genomlarni tez va samarali tahlil qilishda yordam beradi va shu bilan katta hajmdagi genomik ma’lumotlarni qisqa muddatda olish imkoniyatini beradi. NGS texnologiyasi genetik tadqiqotlarda, tibbiyotda va epigenetika sohalarida keng qo’llaniladi [5].

Uchinchi avlod sekvenlash texnologiyalari ketma-ketliklarni uzluksiz ravishda o'qish imkoniyatini beradi. PacBio va Oxford Nanopore usullari butun DNK yoki RNK molekulasini bir uzluksiz zanjir sifatida o'qish imkonini beradi. PacBio texnologiyasi optik usullardan foydalanib DNK molekulasini tahlil qiladi. Oxford Nanopore texnologiyasi esa DNK molekulasini membrana orqali o'tkazish orqali o'qish imkonini beradi va katta genomlarni tezkor o'qish imkoniyatiga ega bo'ladi.molekulyar biologiyada keng qo'llanila boshladi. Shu bilan birga, Allan Maxam va Uolter Gilbert tomonidan ham DNKni kimyoviy modifikatsiya orqali ketma-ketligini aniqlash usuli ishlab chiqildi. Maxam-Gilbert usuli turli xil kimyoviy reagentlardan foydalanib, DNKdagi o'ziga xos nukleotidlar joylashuvini aniqlashga yordam berdi. Shu kashfiyotlar tufayli ilmiy hamjamiyat DNK ning tuzilishini va funksiyasini chuqurroq o'rganish imkoniyatiga ega bo'ldi. Bu ikkala usul ham nukleotidlar ketma-ketligini aniqlashning zamonaviy texnologiyalarini rivojlantirish uchun asos bo'ldi [6].

Nukleotidlar ketma-ketligini aniqlash biotexnologiyada keng qo‘llanilib, turli organizmlar genetik modifikatsiyalashda yordam beradi. Masalan, qishloq xo'jaligida turli o‘simliklar DNK si o‘rganilib, ularning sifatini yaxshilash va kasalliklarga chidamliligini oshirish uchun genetik modifikatsiyalar kiritiladi. Genetika texnologiyalari qatorida, **CRISPR** kabi tahrirlash usullari DNK ketmaketligini maqsadli o‘zgartirish imkonini beradi, bu esa biotexnologiya va genetik tadqiqotlarda yuksak imkoniyatlar yaratadi. Ushbu usullar farmatsevtik mahsulotlar, oziq-ovqat mahsulotlari va atrof-muhitni muhofaza qilishda keng qo‘llanilmoqda [7].

NanoTexnologiyalar DNK sekvenlashni ancha ixcham va arzon usullar bilan amalga oshirishda yordam beradi. Masalan, mayda nanozarralar yordamida mobil qurilmalarda ham DNK tahlillarini o‘tkazish imkoniyati yaratilmoqda. Bu texnologiya shaxsiy genomikani rivojlantirishda keng qo‘llaniladi, ya'ni har bir insonning genetik ma'lumotlarini mobil telefon orqali aniqlash va sog'liq haqida batafsil ma'lumot olish imkonini beradi. Bu esa individual sog'liqni nazorat qilish va kasalliklarni erta bosqichda oldini olish imkoniyatlarini kengaytiradi. Shaxsiy genomika orqali odamlar o'z genetik moyilliklari haqida to'liq ma'lumotga ega bo'lishadi va sog'liqni saqlash rejalarini shaxsiylashtirilgan tarzda tuzishlari mumkin bo'ladi [8].

Materiallar va metodika

Tadqiqot davomida nukleotidlar ketma-ketligini tahlil qilish uchun oddiy usullar qo‘llanildi. Ish uchun oddiy DNK namunalaridan foydalanildi. Eksperimentlar xona haroratida va tabiiy yorug‘lik sharoitida amalga oshirildi.

Ishlatilgan moddalar va vositalar:

- DNK namunalarini olish uchun paxta tayoqchalar.
- Gel elektroforez uchun agaroz va bo‘yoq eritmasi.

- DNKni ajratish uchun oddiy tuz eritmasi (NaCl).
- DNK sintezini kuzatish uchun qog‘oz va qalam.

Ishlatilgan usullar:

1. DNKni ajratish:

- Tupurik yoki oddiy hujayra namunalarini olish uchun paxta tayoqchasi ishlatildi.
- Namuna oddiy tuz eritmasida eritilib, markazdan qochiruvchi usulda DNK ajratib olindi.

2. Elektroforez tayyorlash:

- Agaroz gel eritmasi tayyorlandi va qolipga quyilib, qotishiga ruxsat berildi.
- DNK namunasi bo‘yoq bilan aralashtirilib, gel hujayrasiga joylashtirildi.

3. Vizualizatsiya:

- Gel elektroforezdan so‘ng, DNK bo‘laklari oddiy ultrabinafsha chiroq yordamida kuzatildi.

4. Oddiy tahlil:

Olingan ma’lumotlar asosida DNKning asosiy xususiyatlari qog‘ozda yozib chiqildi.

Natijalar va muhokama

1. **DNK ajratish samaradorligi:** Tadqiqot davomida DNK namunalarini ajratish uchun oddiy tuz eritmasi ishlatildi va natijada DNK bo‘laklarini muvaffaqiyatli olishga erishildi. Ajratilgan DNK tiniq va bir xil ko‘rinishga ega bo‘ldi, bu uning sifatini tasdiqladi.
2. **Elektroforez natijalari:** Agaroz gel elektroforezidan so‘ng, DNK bo‘laklari yaqqol ko‘rindi. Bo‘yoq eritmasi DNKni yoritib, fragmentlarni aniqlashni osonlashtirdi. Bo‘laklarning joylashuvi va hajmi bo‘yicha DNK tarkibida har xil bo‘laklarning mavjudligi kuzatildi.
3. **O‘rganish uchun amaliyot:** Talabalar oddiy vositalar yordamida DNK bilan ishlashning amaliy jihatlarini o‘rgandilar. Ular o‘z qo‘llari bilan DNKni ajratish va tahlil qilish bosqichlarini muvaffaqiyatli bajarib, laboratoriya tajribasini kuchaytirdilar.
4. **Umumiy xulosalar:** Tadqiqot davomida olingan natijalar DNKni oddiy sharoitlarda ham samarali ajratish va o‘rganish imkoniyatini tasdiqladi. Bu talabalar uchun DNK strukturasini tushunish va genetik tahlil texnikalarini o‘rganishda qulay bo‘ldi.

XULOSA

Amaliy tadqiqot davomida nukleotidlar ketma-ketligini aniqlash texnologiyalaridan foydalanish imkoniyatlari o‘rganildi. DNK namunalarini ajratish va tahlil qilish jarayonlari oddiy sharoitlarda ham muvaffaqiyatli amalga oshirildi. Bu usullar talabalar uchun genetik tadqiqotlarning amaliy tomonlarini o‘rganishda qulay bo‘ldi. Gel elektroforezi orqali DNK fragmentlarini muvaffaqiyatli ajratish va

ularni kuzatish natijalari, oddiy laboratoriya usullarining samaradorligini ko‘rsatdi. Bu jarayon orqali DNKni tahlil qilish va strukturaviy xususiyatlarini o‘rganishning asosiy bosqichlari amalga oshirildi. Xulosa qilib aytganda, ushbu amaliy ishlar oddiy laboratoriya sharoitida DNK bilan ishlash ko‘nikmalarini shakllantirishga yordam berdi va genetik tahlil metodlarini kengroq qo‘llash uchun yangi imkoniyatlar yaratdi. Bu esa genetik tadqiqotlar, dori vositalarini ishlab chiqish va kasalliklarni tashxislashda qo‘llanilishi mumkin bo‘lgan samarali vosita sifatida qadrlanadi.

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ЭВОЛЮЦИЯ БИОТОПЛИВА: ЭТАПЫ РАЗВИТИЯ, ПЕРСПЕКТИВЫ И КЛЮЧЕВЫЕ ЭКОЛОГИЧЕСКИЕ РЕШЕНИЯ

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Аннотация. Статья посвящена эволюции рынка биотоплива от его истоков до современных технологий. Тема актуальна для развития сельского хозяйства, энергетики и экологии, поскольку биотопливо снижает загрязнение и улучшает экономику.

Ключевые слова: рапсовое масло, биотопливо, биодизель, экология, экономика, рынок биотоплива.

. The article is devoted to the evolution of the biofuel market from its origins to modern technologies. The topic is relevant for the development of agriculture **Abstract**, energy and ecology, since biofuels reduce pollution and improve the economy.

Keywords: rapeseed oil, biofuels, biodiesel, ecology, economics, biofuel market.

ВВЕДЕНИЕ

Использование альтернативных видов топлива, таких как биотопливо, стало важным направлением в решении проблемы обеспечения сельскохозяйственной техники необходимыми энергетическими ресурсами. Применение биотоплива, особенно в дизельных двигателях внутреннего сгорания, способствует снижению негативного воздействия на окружающую среду, улучшению экологической безопасности и повышению энергоавтономности агропромышленного комплекса.

Основной целью настоящего анализа является изучение этапов развития рынка альтернативных топлив, оценка их потенциала для обеспечения топливно-энергетических ресурсов сельскохозяйственного сектора и исследование перспектив перехода на новые виды моторного топлива, снижающего воздействие на окружающую среду.

Этапы развития биотоплива

1. Начальный этап: Первое использование биотоплива связано с применением древесины, кизяка и угля, начиная с древних времен. Жидкие виды биотоплива, такие как растительные и животные масла, начали использовать значительно позже. Эти продукты служили для освещения, обогрева и приготовления пищи. Основным недостатком этого периода была низкая технологичность и ограниченность сырьевой базы [1].

2. Индустриальный этап: С конца XVIII века начался рост промышленного производства, что стимулировало спрос на энергию. В это время широко использовались такие виды топлива, как китовый жир, который оказался ограниченным ресурсом. Этот этап завершился поиском более доступных и технологичных источников энергии [1].

3. Технологический этап: Развитие химической промышленности и машиностроения в XIX–XX веках позволило перейти от простых видов биотоплива к их промышленной переработке. Были разработаны методы производства первого и второго поколения биотоплива из сельскохозяйственных культур и энергетической биомассы. Однако их распространение столкнулось с проблемами, связанными с использованием земель и продовольственной безопасностью [2].

4. Современный этап: С 1970-х годов XX века и по настоящее время происходит интеграция биотоплива в национальные и международные энергетические программы. Приняты законы и стандарты, разработаны программы субсидирования и поддержки производителей. Особое внимание уделяется биотопливу третьего поколения, включая водоросли и фотосинтетические микроорганизмы, которые демонстрируют высокую энергетическую эффективность [2].

Перспективы и ограничения

Современное развитие рынка биотоплива связано с такими факторами, как:

- снижение выбросов парниковых газов;
- повышение энергоэффективности;
- стимулирование сельского хозяйства.

Однако сохраняются проблемы, включая высокие затраты на производство, конкуренцию за земельные ресурсы и обеспечение продовольственной безопасности. Тем не менее, глобальный спрос на альтернативные виды топлива продолжает расти, что стимулирует научные исследования и внедрение инноваций [3].

Методика исследования

Для достижения поставленных целей использовались методы сравнительного анализа, синтеза информации из научных источников и системного подхода к изучению рынка биотоплива. Анализировались

статистические данные, результаты экспериментов и публикации, касающиеся этапов развития и перспектив использования биотоплива в мировой практике и в условиях Узбекистана. Особое внимание уделялось экологическим и экономическим аспектам применения альтернативных топлив [4].

Узбекистан и жидкие виды биотоплива

Для того чтобы в полной мере оценить потенциал Узбекистана в производстве жидкого биотоплива, необходимо проанализировать некоторые факторы. С одной стороны, это географические условия, доступность транспортной инфраструктуры, знания культивации сельскохозяйственных культур, а с другой — необходимо понять, какие сельскохозяйственные культуры наилучшим образом подходят для производства этанола и биодизеля [5]. Развитие рынка биотоплива в Узбекистана имеет свою отличительную особенность, связанную с рядом факторов: экономических, климатических, территориальных, производственных и др. Для резкого увеличения объемов производства биотоплива на внутреннем рынке должны совпасть направления государственных программ с устойчивым мнением граждан о том, что биотопливо является важным средством для развития энергетического потенциала страны [6]. Узбекистан активно развивает производство биотоплива, особенно из пищевых отходов и растительного сырья, для поддержки экологических инициатив и перехода к «зеленой» экономике [7].

Основные показатели:

1. Объемы производства: Из ежегодно образующихся 3 млн тонн пищевых отходов можно получить до 1,11 млрд литров биоэтанола или 1,02 млрд литров биодизеля. Это также позволяет сократить выбросы CO2 на 1,6 млн тонн, что эквивалентно снижению на 21%.

2. Инвестиции и проекты: В Фуркатском районе Ферганской области при поддержке Южной Кореи запущено производство гранулированных топливных пеллет. На первом этапе привлечены $3 млн прямых инвестиций, с планами расширить производство биоэнергии [8].

3. Потенциал отрасли: Утилизация отходов через биотопливо помогает снизить выбросы парниковых газов на 7,5 млн тонн, если отходы не перерабатываются правильно. Эти меры согласуются с обязательствами Узбекистана по Парижскому соглашению.

4. Использование биотоплива: Биотопливо активно рассматривается как альтернатива для автомобильного транспорта, что способствует снижению зависимости от ископаемого топлива. Благодаря развитию отрасли, Узбекистан также продвигает международные проекты, улучшая экологическую обстановку и создавая возможности для диверсификации энергетики [9].

ЗАКЛЮЧЕНИЕ

Эволюция биотоплива отражает значительные изменения в технологиях, экономике и экологических приоритетах. Несмотря на существующие ограничения, альтернативные виды топлива остаются перспективным направлением для устойчивого развития. Развитие технологий третьего и четвертого поколений, а также реализация государственных программ могут значительно повысить эффективность использования биотоплива и снизить нагрузку на окружающую среду. В условиях Узбекистана развитие производства биотоплива из кукурузы, пищевых отходов и других ресурсов открывает новые возможности для повышения энергетической безопасности и экологической устойчивости.

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O‘QITUVCHI MEHNATI VA TA’LIM TIZIMIDAGI MUAMMOLAR: YECHIMLAR VA TAKLIFLAR

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Annotatsiya: Ushbu maqola O‘zbekistondagi oliy ta’limning asosiy muammolarini tahlil qilishga bag‘ishlangan. Maqolada byurokratizatsiya, o‘qituvchilar uchun ortiqcha yuklama, talabalarning motivatsiya yetishmovchiligi va ilmiy maqolalarning miqdor va sifati o‘rtasidagi nomutanosiblik kabi masalalar ko‘rib chiqiladi. Muallif ushbu muammolar oqibatlarini ko‘rsatish uchun aniq argumentlar va misollar keltiradi hamda ularni hal qilish bo‘yicha tavsiyalar beradi. E’tibor ta’lim sifatini oshirish va akademik muhitni yaxshilash bo‘yicha tizimli yondashuv zaruratiga qaratiladi.

Kalit so‘zlar: oliy ta’lim, byurokratizm, talabalar motivatsiyasi, ilmiy sifat, ta’lim islohotlari

“Проблемы высшего образования в Узбекистане: причины, последствия и пути решения”

Аннотация: Статья посвящена анализу основных проблем высшего образования в Узбекистане. Рассматриваются такие вопросы, как бюрократизация, избыточная учебная нагрузка на преподавателей, нехватка мотивации у студентов и дисбаланс между количеством и качеством научных публикаций. Автор предлагает конкретные аргументы и примеры, демонстрирующие последствия этих проблем, и выдвигает рекомендации для их решения. Особое внимание уделяется необходимости системного подхода к реформам, повышению качества образования и улучшению академической среды.

Ключевые слова: высшее образование, бюрократия, студенческая мотивация, качество науки, реформы в образовании

“Challenges in Higher Education in Uzbekistan: Causes, Consequences, and Solutions”

Annotation: The article examines the key challenges in higher education in Uzbekistan, focusing on issues such as excessive bureaucracy, overwhelming academic workloads for faculty, lack of student motivation, and the imbalance between the quantity and quality of scientific publications. The author provides specific arguments and examples illustrating the consequences of these issues and suggests actionable recommendations for improvement. The emphasis is placed on the need for a systemic approach to reforms, enhancing the quality of education, and fostering a supportive academic environment.

Keywords: higher education, bureaucracy, student motivation, academic quality, education reforms

Kirish

Oliy ta’lim tizimi jamiyatning kelajagini belgilovchi muhim sohalardan biridir. Ammo bugungi kundagi qator muammolar, jumladan, o‘quv jarayonining byurokratlashuvi, ortiqcha yuklama, talabalar tomonidan bilimni qadrlamaslik kabi holatlar ta’lim sifatini pasayishiga olib kelmoqda. Ushbu maqolada oliy ta’lim tizimining dolzarb muammolari, ularning sabab va oqibatlari, shuningdek, ushbu muammolarni hal etish uchun alternativ yechimlar taklif qilinadi.

Mavzu dolzarbligi

Hozirgi davrda ta’lim sifatini oshirish, ilmiy yutuqlarni amaliyotga tatbiq etish, ta’limda raqamli texnologiyalarni qo‘llash dolzarb masalalardir. Lekin bu jarayonda o‘qituvchilarning haddan tashqari ortiqcha yuklama bilan bandligi va byurokratik muammolar ta’lim sifatiga salbiy ta’sir ko‘rsatmoqda. Bundan tashqari, talabalar tomonidan bilim olishga nisbatan beparvolik, baholarni sun’iy ravishda oshirishga intilish kabi holatlar tizimni yanada murakkablashtiradi.

Material va metodika

Ushbu maqolada quyidagi metodlardan foydalanildi:

1. Analitik metod – mavjud ta’lim tizimi muammolarini tahlil qilish uchun xalqaro va mahalliy adabiyotlar ko‘rib chiqildi.

2. Tajriba asosida kuzatish – muallifning amaliy dars jarayonlaridagi kuzatishlari asosida muammolar belgilandi.

3. Solishtirma tahlil – xorijiy oliy ta’lim tizimlari bilan O‘zbekiston tajribasi o‘rtasidagi farqlar o‘rganildi.

4. Keyslar – talabalar o‘rtasida yuzaga kelgan muammolar asosida real hayotiy vaziyatlar tahlil qilindi.

Muammolar va argumentlar

1. Byurokratiya va ortiqcha yuklama

Holat: O‘qituvchilarga qo‘yilgan maqola, monografiya va boshqa ilmiy ishlar sonining ko‘pligi sifatni pasayishiga olib kelmoqda. Yiliga 15 ta ilmiy ish tayyorlash

talab qilinadi, bu esa sifatli tahlil va laboratoriya natijalariga asoslangan ishlarni deyarli imkonsiz qiladi.

Keys:Ogaryova nomdagi M.D.U biokimyo va biotexnologiya kafedra professorining fikriga ko‘ra, sifatli ilmiy maqola yaratish uchun kamida 6-8 oy vaqt kerak bo‘ladi. Ammo bu vaqt talab qilinmay, faqat son ko‘payishiga e’tibor qaratiladi.

Yechim: Ilmiy ishlar sonini emas, sifatini nazorat qilish tizimini joriy qilish. Bir yil davomida bir yoki ikki sifatli maqola talab qilish amaliyoti xalqaro tajribaga mos keladi.

Talabalarning bilim olishga mas’uliyatsizligi

Holat: Talabalar dars paytida beparvo, ma’ruzalarni yozmaydi yoki o‘z vaqtida tayyorlanmaydi. Oraliq baholarni olishda esa yordam so‘rashadi, hatto yolg‘on ma’lumotlar tarqatib, ustozlarning obro‘siga putur yetkazishga urinishadi.

Keys: Bir talaba ma’ruza matni Telegram kanaliga va YouTube tarmoqlariga joylashtirilgan bo‘lsa ham, maruza matni hamda tayyor video roliklardan foydalanmasdan , o‘qimasdan bahoni sun’iy ravishda oshirishni talab qilgan.

Yechim: Raqamli ta’lim platformalarini joriy etish va talabalar faoliyatini shaffof baholash tizimini yaratish. Masalan, dars jarayonida talabalar ishtirokini real vaqt rejimida kuzatib boradigan tizimlar (masalan, Learning Management Systems).

Rahbarlarning o‘qituvchilarga nisbatan bosimi

Holat: Rahbarlar tomonidan ta’lim sifatiga emas, balki talabalar shikoyatlariga asoslangan bosimlar ko‘rsatilib, o‘qituvchilarning motivatsiyasi pasaymoqda.

Keys: Bir o‘qituvchi talabalar shikoyati asosida yuqori rahbariyatdan dakki eshitgan, lekin keyinchalik shikoyat asossiz ekanligi isbotlangan.

Yechim: Rahbarlar tomonidan muammolarni bir tomonlama emas, balki holatning har ikkala tomonini ham o‘rganish orqali hal etish tizimini yaratish.

Xulosa

Yuqorida keltirilgan muammolar ta’lim tizimining sifatiga bevosita ta’sir ko‘rsatmoqda. Byurokratik jarayonlarni qisqartirish, ilmiy ishlar sifatini oshirishga yo‘naltirilgan tartib-qoidalarni joriy etish, talabalar bilimini shaffof va samarali baholash tizimlarini joriy qilish dolzarb masalalardir. Bu borada xalqaro tajribalarga tayanish va ta’lim jarayoniga innovatsion yondashuvni tatbiq etish muhim.

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EKOLOGIK TURIZMNING HOZIRGI AXVOLI

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Toshkent turizm va mehmonxona menejmenti texnikumi
maxsus fan o'qituvchisi

Annotatsiya: Ekologik turizm, yoki ekoturizm, so'nggi yillarda jahon bo'ylab o'sib borayotgan bir tendentsiya bo'lib, bu turizm turi tabiiy muhitni saqlash va mahalliy madaniyatni hurmat qilishga qaratilgan. Ekologik turizmning asosiy maqsadi sayyohlarni tabiiy go'zalliklar bilan tanishtirish, ularni muhofaza qilish va barqaror rivojlanishni ta'minlashdir. Biroq, ekologik turizmning hozirgi ahvoli bir qator muammolar va imkoniyatlar bilan bog'liqdir. Ushbu maqolada, ekologik turizmning hozirgi ahvolini, uning rivojlanishidagi muammolar va imkoniyatlarni, shuningdek, kelajakdagi istiqbollari haqida ma'lumotlar berilgan.

Kalit so‘zlar: ekologik turizm, tabiiy resurslar, sayyohlar l, madaniyat, aholi, ekoturizm, muhit.

Аннотация: Экологический туризм, или экотуризм, – это тенденция, которая в последние годы развивается во всем мире, и этот вид туризма направлен на сохранение природной среды и уважение местной культуры. Основная цель экологического туризма – познакомить туристов с природными красотами, их защитой и устойчивым развитием. Однако современное состояние экотуризма связано с рядом проблем и возможностей. В данной статье представлена информация о современном состоянии экологического туризма, проблемах и возможностях его развития, а также перспективах на будущее.

Ключевые слова: экологический туризм, природные ресурсы, туристы, культура, население, экотуризм, окружающая среда.

Abstract: Ecological tourism, or ecotourism, is a trend that has been growing worldwide in recent years, and this type of tourism aims to preserve the natural environment and respect local culture. The main goal of ecological tourism is to introduce tourists to natural beauties, their protection and sustainable development. However, the current state of ecotourism is associated with a number of challenges and opportunities. This article provides information on the current state of ecological tourism, problems and opportunities in its development, as well as future prospects.

Key words: ecological tourism, natural resources, tourists, culture, population, ecotourism, environment.

Ekologik turizmning o'sishi bilan bog'liq birinchi muammo sayyohlar sonining ortishi va uning tabiiy muhitga ta'siridir. Tabiiy resurslar va muhitga bo'lgan talabning oshishi, ko'plab joylarda ekoturizmning salbiy ta'sirini keltirib chiqarishi mumkin.

Masalan, ba'zi joylarda sayyohlar sonining ortishi, tabiiy muhitga zarar yetkazishi, hayvonlar va o'simliklar uchun xavf tug'dirishi mumkin. Bu holat, ayniqsa, nozik ekotizimlar va muhofaza qilinadigan hududlarda aniq ko'rinadi. Tabiatga bo'lgan ehtiyotkorlik va sayyohlar orasida ekologik ta'lim berish zarurati oshmoqda. Ekologik turizmni rivojlantirishda, sayyohlar va mahalliy aholi o'rtasida o'zaro tushunishni rivojlantirish muhimdir. Sayyohlar, tabiiy muhitni muhofaza qilish va mahalliy madaniyatni hurmat qilishni o'z zimmasiga olishi kerak. Ekologik turizmning hozirgi ahvolida barqarorlik masalalari ham o'z o'rnini egallaydi. Barqaror rivojlanish, tabiiy resurslardan foydalanishni muvozanatlashni talab qiladi. Ekologik turizmni rivojlantirishda mahalliy aholi ishtiroki muhim ahamiyatga ega. Mahalliy aholi ekologik turizmni rivojlantirishda o'z hissasini qo'shishi, ularning madaniyati va an'analarini saqlab qolishi kerak. Shuningdek, ekologik turizmni rivojlantirishda mahalliy iqtisodiyotga ijobiy ta'sir ko'rsatishi mumkin. Mahalliy aholi uchun yangi ish o'rinlari va daromad manbalarini yaratish, ularning turmush darajasini oshirishga yordam beradi. Biroq, mahalliy aholi va sayyohlar o'rtasidagi munosabatlar ko'pincha murakkab bo'lishi mumkin. Sayyohlar, mahalliy madaniyatni va an'analarni hurmat qilmasliklari mumkin, bu esa mahalliy aholi o'rtasida norozilikni keltirib chiqaradi. Ekologik turizmning rivojlanishi uchun ta'lim va xabardorlikni oshirish muhimdir. Sayyohlar, ekologik turizmning mohiyati va uning muhimligini tushunishlari kerak. Ular, tabiiy muhitni muhofaza qilish va mahalliy madaniyatni hurmat qilishni o'z zimmasiga olishi lozim. Ta'lim va xabardorlikni oshirish orqali sayyohlar ekologik turizmni yanada barqaror va samarali qilishlari mumkin. Bu, o'z navbatida, ekologik turizmning rivojlanishiga ijobiy ta'sir ko'rsatadi. Ekologik turizmni rivojlantirishda ta'lim dasturlari va seminarlar o'tkazish, sayyohlar va mahalliy aholi o'rtasida o'zaro tushunishni oshirishga yordam beradi. Shuningdek, ekologik turizm operatorlari, sayyohlarni ekologik masalalar haqida xabardor qilish uchun turli xil materiallar tayyorlashlari kerak. Innovatsion yechimlar va texnologiyalar ham ekologik turizmning hozirgi ahvolida muhim rol o'ynaydi. Yangi texnologiyalar, ekologik turizmni rivojlantirishda yordam berishi mumkin. Masalan, raqamli texnologiyalar yordamida sayyohlar uchun yangi imkoniyatlar yaratish, ularning sayohatlarini yanada qulay va xavfsiz qilish mumkin. Raqamli platformalar orqali sayyohlar, turli joylar va ularning ekologik holati haqida ma'lumot olishlari mumkin. Shuningdek, ekologik turizmni rivojlantirishda barqaror energiya manbalaridan foydalanish va chiqindilarni kamaytirish kabi innovatsion yondashuvlar muhimdir. Bularning barchasi, ekologik turizmning hozirgi ahvolini yaxshilashga yordam beradi. Ekologik turizm operatorlari, yangi texnologiyalarni qo'llash orqali o'z xizmatlarini yanada samarali qilishlari mumkin.[1]

Davlat va xususiy sektor o'rtasida hamkorlik ham ekologik turizmning rivojlanishi uchun muhimdir. Davlatlar, ekologik turizmni rivojlantirish uchun zaruriy qonun va me'yorlarni ishlab chiqishi kerak. Bu, ekologik turizmni barqaror

ravishda rivojlantirishga yordam beradi. Shuningdek, xususiy sektor, ekologik turizmni rivojlantirishda o'z hissasini qo'shishi, yangi loyihalar va tashabbuslarni amalga oshirishi kerak. Bunday hamkorlik, ekologik turizmning rivojlanishiga ijobiy ta'sir ko'rsatadi. Davlat va xususiy sektor o'rtasidagi hamkorlik, mahalliy aholi va sayyohlar manfaatlarini hisobga olishni ta'minlashi lozim. Global iqlim o'zgarishlari ham ekologik turizmning hozirgi ahvolida muhim rol o'ynaydi. Iqlim o'zgarishlari, tabiiy muhitni va ekotizimlarni tahdid ostiga qo'yadi. Bu, ekologik turizmning rivojlanishiga salbiy ta'sir ko'rsatishi mumkin. Sayyohlar, iqlim o'zgarishlari va uning ekologik turizmga ta'siri haqida xabardor bo'lishlari lozim. Iqlim o'zgarishlariga qarshi kurashish va barqaror rivojlanishni ta'minlash uchun yangi strategiyalar ishlab chiqish zarur. Ekologik turizmni rivojlantirishda iqlim o'zgarishlari bilan bog'liq masalalarni hisobga olish, sayyohlar va mahalliy aholi o'rtasida hamkorlikni kuchaytirishga yordam beradi. COVID-19 pandemiyasi ham ekologik turizmning hozirgi ahvoliga jiddiy ta'sir ko'rsatdi. Pandemiya, turizm sohasiga jiddiy zarba berdi, ko'plab sayyohlik joylari yopildi va sayyohlar soni keskin kamaydi. Biroq, bu vaziyat, ekologik turizmni rivojlantirish uchun yangi imkoniyatlar yaratishi mumkin. Sayyohlar, xavfsiz va sog'lom sayohatlarni tanlashga intilishmoqda. Bu, ekologik turizmning o'sishiga olib kelishi mumkin. Mahalliy aholi va ekologik turizm operatorlari, pandemiya sharoitida yangi strategiyalar ishlab chiqishlari kerak. Ekologik turizmni rivojlantirishda, sayyohlar va mahalliy aholi o'rtasidagi o'zaro munosabatlarni kuchaytirish muhimdir. Ekologik turizmning hozirgi ahvoli, nafaqat sayyohlar uchun, balki mahalliy aholi va tabiiy muhit uchun ham foydali bo'lishi kerak. Ekologik turizmni rivojlantirishda, mahalliy aholi va sayyohlar o'rtasidagi o'zaro tushunishni rivojlantirish, barqaror rivojlanishni ta'minlash va tabiiy muhitni muhofaza qilish zarur.[2]

Ekologik turizm, mahalliy iqtisodiyotga ijobiy ta'sir ko'rsatishi, yangi ish o'rinlari yaratishi va mahalliy madaniyatni saqlab qolishi mumkin. Biroq, bu maqsadlarga erishish uchun, ekologik turizmni rivojlantirishda ta'lim, innovatsion yechimlar, davlat va xususiy sektor o'rtasidagi hamkorlik, iqlim o'zgarishlari va pandemiya kabi omillarni hisobga olish zarur. Shuningdek, ekologik turizmning kelajakdagi istiqbollari haqida ham o'ylash zarur. Ekologik turizm, global iqlim o'zgarishlariga qarshi kurashishda muhim rol o'ynashi mumkin. Sayyohlar, ekologik turizm orqali tabiatni muhofaza qilish va barqaror rivojlanishga hissa qo'shishi mumkin. Ekologik turizm, nafaqat tabiiy muhitni saqlab qolish, balki mahalliy aholi va madaniyatni hurmat qilishga ham yordam beradi. Ekologik turizmning rivojlanishi, kelajakda barqaror rivojlanishni ta'minlashga yordam beradi va tabiiy resurslardan foydalanishni muvozanatlashni ta'minlaydi.[3]

Xulosa: Xulosa qilib aytganda, ekologik turizmning hozirgi ahvoli bir qator muammolar va imkoniyatlar bilan bog'liqdir. Tabiiy muhitni muhofaza qilish, mahalliy madaniyatni hurmat qilish va barqaror rivojlanishni ta'minlash muhimdir.

Ekologik turizmni rivojlantirishda ta'lim, innovatsion yechimlar, davlat va xususiy sektor o'rtasidagi hamkorlik, iqlim o'zgarishlari va global pandemiya kabi omillarni hisobga olish zarur. Ekologik turizm, nafaqat sayyohlar uchun, balki mahalliy aholi va tabiiy muhit uchun ham foydali bo'lishi kerak. Bu, ekologik turizmning barqaror rivojlanishini ta'minlashga yordam beradi. Ekologik turizmning rivojlanishi, kelajakda barqaror rivojlanishni ta'minlashga yordam beradi va tabiiy resurslardan foydalanishni muvozanatlashni ta'minlaydi. Ekologik turizm, jahon miqyosida barqaror rivojlanishni ta'minlashda muhim ahamiyatga ega bo'lib, bu soha kelajakda yanada rivojlanishi kutilmoqda.

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