GENERAL CHARACTERISTICS OF THE MATERIAL ON MIDDLE EAR DISEASES

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ANNOTATION

The principles of operation and application of MSCT (multislice computed tomography) in diagnostics of chronic diseases of the middle ear are an important aspect of modern medical practice. MSCT is a high-tech method of education, allowing to obtain detailed and accurate images of the internal structures of the body. In this section we will consider the basic principles of MSCT operation and its application in diagnostics of chronic diseases of the middle ear.

Keyword: Multispiral computed tomography of the middle ear.

The basic principle of MSCT is the use of X-rays to form images. During the examination, the patient is placed on a table that moves inside a ring-shaped apparatus containing an X-ray tube and detectors. X-rays pass through the patient's body and are recorded by detectors. The resulting data is processed by a computer, which forms image slices that display the structure and condition of organs and tissues.

Multislice computed tomography (MSCT) occupies a special place among modern methods of medical imaging, standing out for its unique advantages, especially when it comes to thorough diagnostics of chronic diseases of the middle ear. This diagnostic method is famous for its high spatial resolution, which is its undeniable advantage. Due to this, MSCT is able to provide doctors with extremely detailed and accurate images, which plays a critical role in the process of diagnosing chronic diseases of the middle ear. After all, it is the detailed visual representation that allows specialists to capture even the most minor pathological changes in the structure of the ear and surrounding tissues, which, of course, contributes to more accurate and effective treatment.

Multispiral tomography (MSCT) has unique capabilities, including the ability to visualize anatomical structures in various projections and planes. Thanks to this, specialists receive extensive information about the condition of the ear and surrounding tissues, which is crucial for the diagnosis of chronic diseases. Such a deep analysis allows not only to assess the overall picture of the disease, but also to determine its features and scale in the ear cavity, which is the key to choosing the optimal treatment strategy.

Another important advantage of MSCT is its safety and non-invasive nature. Unlike other diagnostic methods that may require the introduction of instruments or

even surgery, MSCT does not cause any discomfort and is absolutely painless. This makes the MSCT procedure preferable for patients, especially those suffering from chronic diseases of the middle ear, as they may be particularly sensitive to pain. Taking into account all these factors, it can be argued that MSCT is not only an effective, but also a comfortable diagnostic method that can provide an accurate and comprehensive examination of the condition of the ear and its surrounding tissues.

The use of MSCT in the field of diagnostics of chronic diseases of the middle ear opens up broad prospects for medical practice. Particularly valuable is the ability to assess the condition of the eardrum using this method. MSCT is able to determine with high accuracy the presence and degree of damage to the eardrum, which is a key aspect in the process of diagnostics and subsequent treatment of chronic diseases of the middle ear. MSCT can also be used to assess the condition of the auditory ossicles and mastoid cells. Mastoid cells are cavities in the bones of the skull, which are in close proximity to the middle ear. Their condition can affect the development and course of chronic diseases of the middle ear. MSCT allows you to determine the presence of inflammatory processes, tumors or other changes in mastoid cells.

In addition, MSCT can be used to assess the condition of the inner ear. The inner ear plays an important role in the hearing and balance apparatus of the body. MSCT allows us to determine the presence of changes in the inner ear, such as tumors or inflammatory processes that may be associated with chronic diseases of the middle ear.

The technique developed by G.V. Kurilenkov in 2002 was used to analyze the temporal bones in projections including axial and coronary.

• In the axial projection, the patient was lying on his back, the positioning line passed through the upper edge of the orbit and the upper edge of the external auditory canal.

The examination began at the level of the bony opening of the auditory tube and ended at the level of the anterior semicircular canal. The number of sections in the axial projection ranged from 8 to 10.

• In the coronary projection, the patient is positioned on the abdomen, the positioning line is parallel to the coronal suture.

The study was carried out from the anterior edge of the external auditory canal to the posterior semicircular canal. From 8 to 10 sections were made in the coronal projection.

In the context of studies conducted in children under three years of age and in patients with high sensitivity to emotions, an analysis of the effects of drugs during medical procedures was conducted. Effective drugs were used in the experiments. We replaced the sedative component (Relanium) in the form of a 0.5% solution with a dosage of 0.2-0.3 mg per kilogram of weight, which suppresses the activity of the cerebral cortex. To enhance the hypnotic effect in children under one year of age,

GHB (sodium oxybutyrate) was used with a dosage of 50-70 mg per kilogram of weight intravenously. The onset of anesthesia occurs quickly and without awakening or other undesirable reactions. The effect of the narcotic dose of sodium oxybutyrate lasts approximately 30-40 minutes. We use this drug due to its safety: it is non-toxic, does not have a significant effect on breathing, blood flow and liver function. As an antihypoxant, GHB reduces the consumption of oxygen by brain cells. Ketamine was most often used for anesthesia of children over one year old. When ketamine was administered intravenously in an amount of 1-2 mg per kilogram of body weight, the anesthesia became more controllable, and the administration occurred in stages. The child regained consciousness 15-20 minutes after the drug administration was stopped. During the anesthesia, the pulse, blood pressure, respiratory rate and blood oxygen level were monitored using a Cardiocap monitor.To enhance the contrast of images in children weighing up to 40 kg with suspected tumors, non-ionic contrast agents such as Omnipaque or Ultravist were administered at a dose of 1 ml per kilogram of the child's weight. The effective radiation dose for computed tomography of the brain for children aged 2-5 years is 0.2 mSv, for children aged 6-10 years — 0.3 mSv, and for children aged 10-15 years — 0.4 mSv (NRB — 99). When performing computed tomography of the temporal bone, a significantly smaller amount of tissue is irradiated than when examining the entire skull (thickness of the examined layer is about 15 mm, that is, 10 times less). Therefore, the effective dose for computed tomography of the temporal bones is significantly lower than for radiography of the temporal bones using the method of Mayer and Schüller and computer tomography of the entire skull.

Taking into account the above, we can come to the following conclusion: MSCT is an effective and safe method for diagnosing chronic diseases of the middle ear. It allows obtaining detailed and accurate images, determining the characteristics and spread of the disease, and assessing the condition of the eardrum, auditory ossicles, mastoid cells and inner ear. The use of MSCT in diagnosing chronic diseases of the middle ear significantly improves the ability of doctors to determine the diagnosis and prescribe effective treatment.

Literature:

1. Амонов Ш. Э., Саидов С. Х. Экссудативный средний отит у детей. – 2022. URL: https://sciencecentrum.pl/wp-content/uploads/2021/11/Амонов (веб).

2. Андреев Д. В. И др. Единая диагностическая информационная система: использование результатов эндоскопии при интерпретации изображений компьютерной томографии шеи и краниофациальной области // диагностики.– 2021.URL: https://journals.rcsi.science/D/issue/download/4193/pdf

3. Бодрова и. в. мультиспиральная компьютерная томография (мскт) в диагностике причин кондуктивной и смешанной тугоухости. url: https://sechenov.ru/upload/222572.pdf.

4. Baranov K.K., Bogomilsky M.R., Minasyan V.S. Modern approaches to the diagnosis and treatment of exacerbations of chronic purulent otitis media in children // Bulletin of the Russian State Medical University. 2015. №1. URL: https://cyberleninka.ru/article/n/sovremennye-podhody-k-diagnostike-i-lecheniyu-obostreniy-hronicheskogo-srednego-gnoynogo-otita-u-detey.

5. Bichurina T. A., Litvinenko I. V. Results of complex diagnosis of chronic hyperplastic laryngitis // Russian otorhinolaryngology. - 2009. – No. 4. – pp. 33-38. URL:https://cyberleninka.ru/article/n/rezultaty-kompleksnoy-diagnostiki-hronicheskogo-giperplasticheskogo-laringita.

6.Вирапонс С., Ротман С.Г., Кир Эл и др. Компьютерная томографическая анатомия височной кости. / / AJNR. — 1982. — Т.3. - С. 379-389.

7. Вирапонсе С, Сарвар М, Бхимани С и др. Компьютерная томография пневматизации височной кости: нормальная картина и морфология. / / AJNR. - 2015. - Т. 6. - С. 551-559.