CLINICAL AND LABORATORY DIAGNOSIS OF PYELONEPHRITIS

Berdiyarova Shokhida Shukurullaevna,
Najmiddinova Nigora Kamoliddinovna,
Khamrayeva Feruza Khasanovna.
Berdiyarova Shokhida Shukurullaevna *- assistant at the Department of Clinical Laboratory Diagnostics*
Najmiddinova Nigora Kamoliddinovna *- Assistant at the Department of Clinical Laboratory Diagnostics*
Khamraeva Feruza Khasanovna *- cadet at the Department of Clinical Laboratory Diagnostics*
Samarkand State Medical University
Republic of Uzbekistan, Samarkand

Abstract: The article describes a comprehensive study that includes all the necessary laboratory markers for the diagnosis of acute pyelonephritis, including urine culture with determination of sensitivity to antibiotics and assessment of kidney function. You suspect pyelonephritis or feel characteristic symptoms: lower back pain, fever, discomfort when urinating. Don't ignore these signs! Pyelonephritis is a serious inflammatory kidney disease that can lead to complications if treatment is not started on time. The step towards health begins with an accurate diagnosis, and laboratory tests play a key role here.

Key words: differential diagnosis of pyelonephritis, pathogenesis, pyelonephritis, laboratory.

КЛИНИКО-ЛАБОРАТОРНОЕ ДИАГНОСТИКЕ ПИЕЛОНЕФРИТА

Бердиярова Шохида Шукуруллаевна, Нажмиддинова Нигора Камолиддиновна, Хамраева Феруза Хасановна
Бердиярова Шохида Шукуруллаевна - ассистент кафедре клинической лабораторной диагностики
Нажмиддинова Нигора Камолиддиновна - ассистент кафедре клинической лабораторной диагностики
Хамраева Феруза Хасановна - курсант кафедре клинической лабораторной диагностики Самаркандский государственный медицинский университет

Аннотация: В статье дана характеристика комплексное исследование, включающее все необходимые лабораторные маркеры для диагностики острого

пиелонефрита, в том числе посев мочи с определением чувствительности к антибиотикам и оценку функции почек.

Вы подозреваете пиелонефрит или чувствуете характерные симптомы: боль в пояснице, повышение температуры, дискомфорт при мочеиспускании. Не игнорируйте эти признаки! Пиелонефрит – это серьезное воспалительное заболевание почек, которое может привести к осложнениям, если не начать лечение вовремя. Шаг к здоровью начинается с точного диагноза, а ключевую роль здесь играют лабораторные анализы.

Ключевые слова: дифференциальная диагностика пиелонефрита, патогенез, пиелонефрит, лаборатория.

Республика Узбекистон, г. Самарканд

Pyelonephritis often occurs due to bacteria entering the urinary tract and their subsequent ascent to the kidneys. The risk of the disease increases in the presence of the following factors: A general urine test will reveal the presence of an inflammatory process. Pyelonephritis is characterized by an increase in the number of white blood cells, as well as the presence of bacteria (normally bacteria should not be detected in urine). The presence of protein and glucose is also likely. Tests for pyelonephritis allow not only to confirm the diagnosis, but also to assess the general condition of the body, identify the causative agent of infection and its sensitivity to antibiotics. This is necessary to prescribe effective treatment and monitor its effectiveness. Its laboratory examination reveals bacteriuria, minor proteinuria and microhematuria. A general blood test for pyelonephritis will show an increased number of white blood cells and increased ESR. A biochemical blood test in some cases will reveal an excessive content of nitrogenous slags. In urine analysis, pyuria is the most common finding in patients with acute pyelonephritis. Proteinuria, bacteriuria and microscopic hematuria may be present in the urine analysis. Other causes, such as kidney stones, should also be considered in the presence of hematuria. Pyelonephritis is an inflammatory kidney disease of infectious origin. It is more often caused by conditionally pathogenic microflora: in 90% of cases - E. coli, in the rest – enterococcus or staphylococcal infection.

Symptoms in adults and children

Symptoms of pyelonephritis may include: high fever and chills, pain in the lower back or side, general malaise, fatigue, nausea and vomiting, frequent and painful urination, cloudy urine or urine with an unpleasant odor, the appearance of blood in the urine (hematuria)

In children, symptoms may be less specific and include irritability, loss of appetite and fever. The causes of the disease, the presence of urolithiasis, urinary tract

abnormalities, reduced immunity, prolonged use of a catheter in the bladder, pregnancy, prostatitis in men.

Laboratory diagnosis of pyelonephritis

Pyelonephritis is a non-specific infectious kidney disease. The disease can occur in both acute and chronic forms. Pyelonephritis most often occurs in:

young children under the age of seven years — this is due to the peculiarities of anatomical development; women 18-30 years old — due to the onset of sexual activity, pregnancy and childbirth; elderly men suffering from prostate adenoma — as a result of prostatic hyperplasia, urinary tract obstruction occurs. Acute pyelonephritis begins suddenly and is accompanied by:

temperature rise to 39-40 degrees, profuse sweating, nausea and vomiting,headache and loss of appetite, dull pain in the lower back, turbidity of urine and the appearance of blood impurities.

The chronic process is often a consequence of an untreated acute and is characterized by blurred symptoms. With a prolonged asymptomatic course, renal failure gradually develops, which is why it is so important to consult a doctor in time and undergo treatment.

What biomaterial can be used for research?

Venous blood, a single portion of urine, an average portion of morning urine.

How to properly prepare for the study? Exclude alcohol from the diet within 24 hours before the study. Do not eat for 12 hours before the study, you can drink clean non-carbonated water. Exclude (in consultation with a doctor) taking diuretics within 48 hours before collecting urine.

Completely exclude (in consultation with the doctor) taking medications within 24 hours before the study. For women, it is recommended to collect urine before menstruation or 2-3 days after its end.

Eliminate physical and emotional stress for 30 minutes before the study. Do not smoke for 30 minutes before the study.

1. Basic tests

Urine analysis with sediment microscopy. The analysis includes a macroscopic assessment of urine (color, odor, transparency), its physico-chemical properties (relative density, pH, presence of protein, glucose) and microscopic examination (presence of leukocytes, epithelium, erythrocytes, salt crystals). Pyuria (more than 5-10 leukocytes in the field of vision) is observed in almost all patients with acute pyelonephritis. Although leukocyte cylinders can be found in other conditions, they are very specific to acute pyelonephritis. Both pyelonephritis and cystitis may have hematuria.

Urine culture on flora with determination of antibiotic sensitivity. According to the definition of the American Society of Infectious Diseases (IDSA), the diagnosis of

acute pyelonephritis is confirmed upon receipt of more than 10,000 colony-forming units (CFU)/mm3 in urine culture in the presence of appropriate clinical signs of the disease. A smaller number of colonies (from 1,000 to 10,000) should also alert the doctor if pyelonephritis is suspected in men and pregnant women. The result of urine culture is positive in 90% of patients with pyelonephritis. Although most cases of this disease are caused by an E infection. coli, other possible pathogens are Staphylococcus saprophyticus, Proteus, Klebsiella, Enterococci, Pseudomonas, yeast fungi, as well as mixed flora. In patients with diabetes mellitus, Klebsiella, Enterobacter, Clostridium and Candida are more often detected.

2. Additional tests:

Clinical blood test, leukocyte formula and ESR. Leukocytosis and an increase in ESR may indirectly indicate the severity of the process. In people with immunosuppression (including elderly patients), pronounced leukocytosis may be absent, and in severe (septic) course of the disease, leukopenia may occur.

Leukocytes In urine usually contain neutrophils. At low osmolality and alkaline reaction (pH 8.0 - 9.0), leukocytes increase in size, swell, and Brownian motion of neutrophil granules is detected in the cytoplasm. With prolonged exposure to urine containing bacteria, neutrophils are destroyed. Normally, 1 ml of a morning urine portion contains up to 4 leukocytes. An approximate study of urine sediment in men normally shows 0-2, in women up to 4-6 leukocytes in the field of vision. Differentiation of leukocytes in stained urine samples is carried out using microscopy, expressing the number of different forms as a percentage. 71 Pyuria (leukocyturia) is the most characteristic symptom of an infectious and inflammatory process in the kidneys and urinary tract. Chronic and non-infectious inflammations are characterized by leukocyturia more than bacteriuria, which is unusual in these cases. Leukocyturia is more common in women than in men, this is due to a large number of diseases of the urinary tract and a high probability of contamination of urine with vaginal secretions. Leukocyturia and bacteriuria are characteristic of acute and chronic pyelonephritis. This is especially important in the diagnosis of chronic pyelonephritis, which often occurs without pronounced clinical signs. Leukocyturia is the main symptom of inflammatory diseases of the urinary tract (pyelitis, cystitis, urethritis). It is possible in congenital and acquired disorders of urine outflow, including structural abnormalities and urolithiasis. Lymphocyturia is characteristic of kidney diseases of immune origin: chronic glomerulonephritis, lupus nephritis, late stage chronic lymphocytic leukemia. Eosinophils appear in the urine in chronic pyelonephritis of tuberculous genesis, pyelonephritis, cystitis, urethritis of allergic etiology.

Serum creatinine (with determination of GFR). Creatinine is a traditional marker for assessing kidney function, which has limited diagnostic value at present. It is preferable to calculate the glomerular filtration rate (GFR) based on serum creatinine

concentration and additional parameters, such as gender and age. A decrease in GFR indicates a violation of renal function, which, as a rule, accompanies a severe course of pyelonephritis or is observed with numerous relapses of the disease.

In most cases, the data from this extensive laboratory study is sufficient to diagnose acute pyelonephritis. Instrumental tests (ultrasound, MRI) are indicated only in the complicated course of the disease. It is recommended to repeat these tests to control the treatment of the disease. A control urine culture on the flora is carried out 1-2 weeks after the end of antibiotic therapy. Repeated analyses are recommended to be performed using the same test systems.

Take it out. Standard laboratory tests for suspected kidney disease include: a general clinical blood test — with the determination of ESR and a detailed leukocyte formula; biochemistry — creatinine, uric acid, inorganic phosphorus, total protein and protein fractions; a Rehberg sample, a urine test according to Nechiporenko and Zimnitsky.

Literature

1. Узденов М.А., Яненко Э.К., Гербекова И.Д. Кон-сервативная противорецидивная терапия больных моче-каменной болезнью // Медицинский вестник Башкорто-стана. 2011. Т. 6. № 3. С. 95—99.
2. Шарафутдинов М.А. Динамика и прогноз заболе-ваемости взрослого населения Республики Башкорто-стан болезнями мочеполовой системы // Медицинский вестник Башкортостана. 2010. № 6. С. 11—15
3. Спиридонова Е.С. Медико-социальная характе-ристика больных с урологической патологией // Се-стринское дело и высшее сестринское образование: ма-териалы научно-практической конференции. Уфа: Вагант, 2010. Вып. 3. С. 60—62.
4. Kudratova Z. E.Isomadinova L. K.Sirojeddinova S. F. Tursunova M. E.Current modern etiology of anemia. novateur publications international journal of innovations in engineering research and technology. № 10. 2023, P. 1-4.
5. Даминов Ф. А. и др. Синдром кишечной недостаточности и его коррекция у тяжелообожженных //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021-№. S1. – С. 20-21.
6. Ибрагимова Н. и др. РАССТРОЙСТВА ИММУННОЙ СИСТЕМЫ. ПАТОГЕНЕТИЧЕСКИЕ ОСНОВЫ //Центральноазиатский журнал академических исследований. – 2024. – Т. 2. – №. 1. – С. 4-8.
7. Feruz O'ktam o'gli T., Mengdobilovich M. N. ANALYSIS OF GLYCEMIA AND GLUCOSURIA IN PATIENTS WITH DIABETES AND COVID-19 //Open Access Repository. – 2023. – Т. 4. – №. 2. – С. 177-181.
8. Dushanova G. A., Nabiyeva F. S., Rahimova G. O. FEATURES OF THE DISTRIBUTION OF HLA-ANTIGENS AMONG PEOPLE OF THE UZBEK

NATIONALITY IN THE SAMARKAND REGION //Open Access Repository. – 2023. – Т. 10. – №. 10. – С. 14-25.

9. Berdiyarova Sh.Sh., Ahadova M.M., Ochilov S.A. COMPLICATIONS OF TREATMENT OF ACUTE HEMATOGENOUS OSTEOMYELITIS, LITERATURE REVIEW, Galaxy International Interdisciplinary Research Journal 293-298
10. Бердиярова Ш.Ш., Юсупова Н.А., Ширинов Х.И. Клинико-лабораторная диагностика внебольничных пневмоний у детей, Вестник науки и образования, 80-83
11. Kudratova Zebo Erkinovna, Karimova Linara Alixanovna Age-related features of the respiratory system // ReFocus. 2023. №1. URL: https://cyberleninka.ru/article/n/age-related-features-of-the-respiratory-system.
12. Sabirovna I. N., Kizi U. S. I. FEATURES OF THE COURSE OF POSTPONED PREGNANCY //Research Focus. – 2023. – Т. 2. – №. 1. – С. 236-240.
13. Isomadinova L.K. Qudratova Z.E. Shamsiddinova D.K.Samarqand viloyatida urotiliaz kasalligi klinik-kechishining o’ziga xos xususiyatlari. Central asian journal of education and innovation №10. 2023 , P. 51-53
14. Ширинов Х. И., Ибрагимова Н. С., Ибрагимов Б. Ф. НЕБЛАГОПРИЯТНЫЕ ИСХОДЫ СИНДРОМА ПОЛИКИСТОЗНЫХ ЯИЧНИКОВ У МОЛОДЫХ ЖЕНЩИН //Journal of new century innovations. – 2023. – Т. 26. – №. 3. – С. 185-189.
15. Feruz O'ktam o'gli T., Mengdobilovich M. N. ANALYSIS OF GLYCEMIA AND GLUCOSURIA IN PATIENTS WITH DIABETES AND COVID-19 //Open Access Repository. – 2023. – Т. 4. – №. 2. – С. 177-181.
16. Маматова М.Н., Шайкулов Х.Ш. и др. Применение реакции непрямой гемагглютинации для определения антител к стафилококковому токсину // Журнал «Экономика и социум». 2024, №7 (122).