

MODERN METHODS OF LABORATORY DIAGNOSTICS OF PYELONEPHRITIS

Kudratova Z. E.

PhD, Assistant of the Department of Clinical Laboratory
Diagnosis of Samarkand State Medical University

Utayeva N. B.

Student of the Faculty General Medicine

Zulfiqarova M. Ya.

Student of the Faculty of Pediatrics

Do'stmurodova X. M.

Student of the Faculty of Pediatrics

Jonqobilova H. U.

Student of the Faculty of Pediatrics
Samarkand State Medical University, Uzbekistan, Samarkand

Abstract

Pyelonephritis is an infectious and inflammatory disease of the kidneys with predominant involvement of the calyx and tubulointerstitial tissue, often involving the tubular apparatus. The main causative agents are Gram-positive bacilli of the Enterobacter family, of which Escherichia coli accounts for 80%, less frequently occurring Proteus, Klebsiella, etc. [2,4,6,9].

Keywords: dysuria, inflammation, tubulointerstitial tissue, pyelonephritis, calyx-lochanous system.

Introduction

Renal damage in acute pyelonephritis is characterised by focal inflammation and lymphohistiocytic infiltration of interstitial tissue with stromal oedema and tubule destruction. In chronic pyelonephritis (CP), connective tissue overgrowths and areas of dilated tubules filled with colloid predominate. The most important feature that distinguishes pyelonephritis from other tubulointerstitial renal lesions is the involvement of the calyx-lochanous system in the inflammatory process [3, 10, 13].

The biological properties of microorganisms are of primary importance in the development of pyelonephritis, with Gram-negative flora predominating among the causative agents, which are isolated in an average of 80% of cases. Up to 21% are Enterococci and up to 14-16% - Proteus mirabilis. Microbial associations are possible, which occur in about 20% of cases [4, 11, 12]. Pyelonephritis may be detected incidentally in the late stages of the disease and may also accompany urolithiasis, hypertension and chronic renal failure [6, 7,8,9]. The classical course of acute pyelonephritis is characterised by high fever and severe chills. Since ancient times, the



diagnosis of the disease was based on its leading clinical manifestations: fever, chills, low back pain, and dysuria. Recently, there has been a tendency towards its latent and asymptomatic course [1,3,7,13].

Laboratory diagnosis of urinary tract infections includes a number of methods

-Bacterioscopic, the "oldest" method of studying the microbial agent by microscopy.

-Serological, based on the "antigen-antibody" reaction. When exposed to pathogenic pathogens (antigens), the body produces an antibody response in the form of immunoglobulins of various classes - M, A, G [7, 14].

-Culture (bacteriological) is the "gold standard" in microbiology. This method is complicated because it requires special conditions: a room certified for a certain hazard class, appropriate equipment (autoclaves, thermostats, mediators) and highly qualified specialists. It also has the disadvantage of a long diagnostic process and microorganisms' fastidiousness to growth conditions [8,9,10,12].

-Molecular-biological, based on the ability of DNA chains to recognise each other: a) the most common method is polymerase chain reaction. Its essence is that nucleotide sequences (primers) complementary to the genetic material of the desired pathogen are introduced into the sample containing the infectious agent. Another well-known method of nucleic acid amplification is the ligase chain reaction. It is based on the ability of DNA ligase to join two pairs of complementary oligonuclei after their hybridisation with the target DNA sequences in vitro [9, 10, 13].

-Clinical urinalysis. In exacerbations of CP, an increase in the number of leukocytes (leukocyturia) is observed in urine tests. In most cases it is insignificant, but can reach 40-60 and more leukocytes in the field of view. More accurate indicators are given by the Nechiporenko test (the norm is up to 2000-4000 in 1 ml). A direct correlation between the degree of leukocyturia and the severity of pyelonephritis is not always present. Proteinuria, as a rule, is minimal or absent, although in some cases may exceed 1 g / l. The presence of salts in the urine sediment (calcuria, uraturia, phosphaturia) is not a typical sign of pyelonephritis and is more likely to indicate urolithiasis, uric acid diathesis or bone resorption processes. The results of clinical urinalysis should always be compared with the complaints, history and clinical picture [6, 8, 11]. In a three-cup urine sample, the presence of bacteria in all portions of the urine is usually combined with high leukocyturia in the same portions, which, if there are also clinical manifestations, is in favour of the diagnosis. Detection of bacteria and leukocyturia only in the first portion in the absence of clinical manifestations of pyelonephritis is more characteristic of colpitis, cystitis, urethritis, prostatitis. Erythrocyturia is not excluded, but is not a characteristic sign. It is more often observed in cystitis or in the combination of pyelonephritis with urolithiasis, adenoma or prostate cancer [4, 7, 9]. The most reliable is the Zimnitsky test, which reveals the variation of urine specific gravity values during the day [2,4, 3.7, 10]. The relative density of urine in pyelonephritis is an important sign. It can not only decrease during the chronic course of the disease, but also transiently decrease in the acute stage, then returning to normal values, which is one of the criteria of remission. Urine culture is almost ideal for identifying the causative agent and selecting an adequate antibacterial drug. In real clinical practice, this is hindered by a number of objective reasons: - the necessity of three-fold sowing, because a single sowing gives at least 20% of false positive results, but the study takes considerable time - from several days to a week;

- there is a problem of collecting the average portion of urine required for culture in the elderly, paraplegic and postoperative patients. Urine collection by catheter is currently not recommended due to the high risk of introducing ascending infection; - in the case of bacterial culture growth,



the question of whether the inflammatory process in the kidney is supported by these microorganisms remains unresolved. The detection of at least 100 thousand microbial bodies per 1 ml of urine is considered reliable [1,4, 5].

Thus, the diagnosis of genitourinary diseases is complex and requires a comprehensive approach.

References

1. Berdiyeva Sh.Sh., Ahadova M.M., Ochilov S.A. «Complications of treatment of acute hematogenous osteomyelitis, literature review» *Galaxy International Interdisciplinary Research Journal* 293-298 стр.
2. Бердиярова Шохида Шукуруллаевна, Муртазаева Насиба Комилжоновна. *Современные аспекты диагностики и лечения остеомиелита // ReFocus. 2022. №4.*
3. Isomadinova L. K., Kudratova Z. E. Clinical and laboratory characteristics of vomiting in pregnant women in early pregnancy // *Doctor's herald journal.* – 2023. – Т. 2. – С. 52-56.
4. 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>.
5. Berdiyeva Shohida Shukurullayevna, Isomadinova Lola Kamolidinovna, Komulova Zarnigor Nabijonovna. (2023). Differential diagnosis of alcoholic and viral hepatitis. *World Bulletin of Public Health*, 21, 8-11.
6. Isomadinova L.K, Qudratova Z.E., Babaxanova F.Sh. Clinico-laboratory features of the course of covid-19 with hepatitis B. *Journal of new century innovations №-3. 2023 P. 60-65.*
7. 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*
8. 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.*
9. 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.
10. Umarova S. S., Mukhamadiyeva L. A., Nabiyeva F. S. The pathogenesis of rheumatic fever // *Journal of new century innovations.* – 2023. – Т. 29. – №. 4. – С. 164-169.
11. Nabiyeva F. S. et al. Creation of optimum conditions for propagation of *saccharomyces cerevisiae* yeast // *Journal of new century innovations.* – 2023. – Т. 23. – №. 1. – С. 85-91.
12. Sadridinova N. F., Ugli A. S. S., Kizi O. B. K. Biological properties of the yeast *saccharomyces cerevisiae* // *Research Focus.* – 2022. – Т. 1. – №. 4. – С. 18-22.
13. Sabirovna I. N. et al. The role of homocystein in the pathogenesis of polycystic ovarian syndrome in women // *Research Focus.* – 2023. – Т. 2. - №. 2. - С. 81-84.
14. Sabirovna I. N., Asrorovna H. S. The significance of folic acid, homocystein and endothelin-1 in the development of polycystic ovarian syndrome in women of reproductive age // *Journal of new century innovations.* – 2023. – Т. 23. – №. 1. – С. 104-108.
15. Sabirovna I. N. et al. Dysfunctions of the Immune System and Their Role in the Development of Diseases // *The Peerian Journal.* – 2023. – Т. 23. – С. 49-52.

