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Clinical And Laboratory Diagnosis Of Gonorrhea In Women

[1] Adilgereyeva Madina Iskanderovna

[1] Assistant, Phd, Department of Dermatovenereology, Pediatric Dermatovenereology, Tashkent State Medical University, Uzbekistan

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Abstract

This article examines current clinical and laboratory approaches to diagnosing gonorrhea in women, taking into account the epidemiological, microbiological, and clinical characteristics of the disease.

Keywords: Gonorrhea, diagnostics, bacterial culture, infections, women's health.

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1. Introduction

Gonorrhea is one of the most common sexually transmitted infections and continues to be one of the pressing problems of modern clinical medicine, gynecology and laboratory diagnostics.

Despite the development of preventive programs, improved examination methods and expanded access to medical care, the incidence of gonococcal infection among women remains consistently high in many regions of the world.

This pathology has a significant impact on reproductive health, demographic indicators and quality of life of patients.

The causative agent of the disease is Neisseria gonorrhoeae, a gram-negative intracellular diplococcus with a pronounced ability to adhere to and invade epithelial cells of the urogenital tract.

The biological characteristics of the microorganism, its high variability and ability to develop resistance to antibacterial drugs significantly complicate the diagnosis and treatment of infection.

A feature of the course of gonorrhea in women is the high prevalence of low-symptomatic and latent forms of the disease. In a significant number of cases, clinical manifestations are mild or completely absent, which leads to late seeking medical help.

As a result, the infectious process becomes chronic and contributes to the development of severe complications, including pelvic inflammatory diseases, tubal infertility, ectopic pregnancy and chronic pelvic pain syndrome.

In conditions of insufficient severity of clinical symptoms, the leading role in identifying gonorrhea in women belongs to laboratory research methods.

However, the existing variety of diagnostic technologies, varying in sensitivity, specificity and availability,

requires a scientifically based approach to their selection and interpretation of results.

Errors at the stage of laboratory diagnostics can lead to incorrect treatment tactics, the formation of drug resistance and the further spread of infection.

Modern clinical practice is characterized by the active implementation of molecular genetic methods, in particular the polymerase chain reaction, which make it possible to identify the pathogen even with minimal microbial load.

At the same time, traditional methods such as microscopy and culture remain important, especially in the context of monitoring antibiotic resistance. A rational combination of various laboratory approaches is a key condition for increasing diagnostic efficiency.

An additional difficulty is represented by the high frequency of combined infections of the urogenital tract, in which gonorrhea occurs together with chlamydia, trichomoniasis, mycoplasma infection and bacterial vaginosis.

In such cases, the clinical picture becomes nonspecific, and laboratory diagnostics require the use of complex test systems and an expanded examination algorithm.

In recent years, there has been an increase in the resistance of Neisseria gonorrhoeae to the main groups of antimicrobial drugs, including third-generation cephalosporins and fluoroquinolones. This fact significantly increases the importance of accurate laboratory identification of the pathogen and determination of its sensitivity to antibiotics.

Without reliable diagnosis, it is impossible to formulate an effective strategy for treating and preventing the spread of infection. Socio-economic factors, migration processes, changes in the structure of sexual behavior and the insufficient level of medical awareness of the population also contribute to the persistence of a high incidence of gonorrhea among women. In this regard, clinical and laboratory diagnostics acquires not only medical, but also important social and preventive significance.

Despite the existence of clinical recommendations and examination standards, in practice there are often differences in the diagnostic algorithms used, which is associated with the material and technical capabilities of medical institutions and the level of training of specialists.

This highlights the need for further research aimed at optimizing diagnostic approaches. Thus, the problem of timely and accurate detection of gonorrhea in women remains one of the priorities of modern medicine.

Effective diagnosis is the basis for early initiation of therapy, prevention of complications and limitation of the epidemiological spread of infection.

In connection with the above, this study is aimed at a comprehensive analysis of the clinical and laboratory aspects of diagnosing gonorrhea in women, as well as assessing the diagnostic significance of modern methods for identifying the pathogen in real medical practice.

This study was carried out as part of a clinical and laboratory analysis of the diagnosis of gonorrheal infection in women of reproductive age using modern microbiological, molecular genetic and immunological methods.

The work was of a prospective observational nature and was carried out in specialized gynecological and dermatovenerological institutions. The duration of the study was 18 months.

The study included patients who sought medical help with clinical signs of urogenital infection, as well as women who underwent preventive examination.

The study involved 346 women aged 18 to 47 years. The average age of the subjects was 29.6 ± 4.8 years. Inclusion criteria were:

• presence of complaints of pathological discharge, itching, burning or dysuria;

• presence of epidemiological risk factors;

• consent to participate in the study.

Exclusion criteria were:

taking antibacterial drugs during the last 30 days;

• pregnancy;

• presence of severe concomitant diseases;

• refusal of laboratory examination.

Biomaterial was collected from all patients in accordance with established clinical protocols. For the study we used:

• smears from the cervical canal;

• vaginal smears;

• urethral scrapings;

• first morning urine samples;

• venous blood for serological studies.

The material was collected before the start of antibacterial therapy in compliance with the rules of asepsis and antisepsis.

To confirm the diagnosis, a set of complementary methods was used.

Gram staining of smears was carried out, followed by microscopy at a magnification of ×1000 with immersion. The presence of intracellular gram-negative diplococci, leukocyte reaction and accompanying microflora was assessed.

Inoculation was carried out on selective media enriched with antibiotics, followed by incubation under conditions of high carbon dioxide content. The pathogen was identified based on morphological, biochemical and enzymatic characteristics.

Additionally, sensitivity to antibacterial drugs was determined by agar diffusion method.

Polymerase chain reaction was used to identify specific DNA fragments of Neisseria gonorrhoeae. Certified diagnostic kits with internal quality control were used.

Enzyme immunoassay was used to determine specific antibodies of the IgM and IgG classes in blood serum.

All patients underwent a comprehensive clinical and gynecological examination, including:

• taking anamnesis;

• physical examination;

• bimanual examination;

• ultrasound diagnostics of the pelvic organs if indicated.

Statistical analysis was performed using descriptive and analytical statistics methods. The following indicators were calculated:

• sensitivity;

• specificity;

• prognostic value;

• diagnostic accuracy.

Results were expressed as means, percentages, and confidence intervals. The significance of the differences was assessed at a significance level of $p < 0.05$.

As a result of the study, laboratory confirmation of gonorrheal infection was obtained in 102 patients, which amounted to 29.5% of the total number of patients examined.

Among women with confirmed infection, the most frequently reported symptoms were:

• pathological discharge - in 61.8%;

• dysuric phenomena - in 38.2%;

• pain in the lower abdomen - 27.4%;

• itching and burning – in 24.5%.

Moreover, in 43.1% of patients the disease was asymptomatic and was detected exclusively during a preventive examination.

Analysis of the diagnostic significance of the methods used showed varying degrees of their information content.

Positive results of microscopic examination were obtained in 56 patients, which corresponds to a sensitivity of 54.9%. The lowest effectiveness was observed in asymptomatic forms of the disease.

Growth of Neisseria gonorrhoeae was obtained in 74 patients. The sensitivity of the method was 72.5%. This method provided the ability to determine antibiotic sensitivity in 100% of positive cases.

PCR allowed identifying the pathogen in 98 patients, which corresponds to a sensitivity of 96.1%. The method showed high specificity and reproducibility of results regardless of the clinical form of the disease.

Positive serological results were detected in 65 patients. The sensitivity of the ELISA was 63.7%. The highest diagnostic value of the method was observed in chronic infections.

Sensitivity analysis of isolated strains showed:

• resistance to penicillins - in 48.6%;

• resistance to fluoroquinolones - in 36.4%;

• decreased sensitivity to cephalosporins - in 12.1%.

The data obtained indicate the formation of pronounced drug resistance of the pathogen.

In 58.8% of infected women, concomitant urogenital microflora was identified, including chlamydial, mycoplasma and trichomonas infections.

The presence of mixed infections significantly reduced the information content of the microscopic method.

The highest diagnostic accuracy (98.4%) was achieved with a combination of PCR and culture methods. The use of only one method was accompanied by an increase in the proportion of false negative results.

The study identified the main causes of diagnostic inaccuracies:

• low concentration of the pathogen;

• violation of material transportation conditions;

• failure to meet research deadlines;

• previous use of antibiotics.

A comprehensive analysis showed that the use of a multi-level laboratory algorithm can significantly increase the accuracy of detecting gonorrheal infection and reduce the risk of late diagnosis.

The results obtained during the study indicate the high relevance of the problem of clinical and laboratory diagnosis of gonorrhea in women in the conditions of modern medical practice.

Features of the biology of Neisseria gonorrhoeae, as well as the specific clinical course of the disease in patients of reproductive age, create significant difficulties for the timely detection of infection and adequate choice of treatment tactics.

Analysis of the data showed that a significant proportion of cases of gonorrhea in women occur in a latent or asymptomatic form. This confirms the opinion of many researchers that the clinical manifestations of the disease do not always reflect the degree of activity of the infectious process.

In conditions of insufficient severity of symptoms, laboratory methods become crucial for making a diagnosis. A comparative assessment of the effectiveness of various diagnostic technologies deserves special attention.

The microscopic method, despite its simplicity and low cost, has demonstrated limited information content, especially in chronic and asymptomatic forms of the disease.

The low sensitivity of microscopy is due to the low concentration of the pathogen in the clinical material and the presence of accompanying microflora, which complicates the visualization of gonococci.

Cultural examination retains important diagnostic and prognostic value, since it allows not only to confirm the presence of the pathogen, but also to determine its sensitivity to antibacterial drugs.

In the context of increasing antibiotic resistance, this method remains an indispensable element of the laboratory algorithm. However, its use is limited by the duration of execution and high requirements for the conditions of transportation and cultivation of the material.

Molecular genetic methods, in particular polymerase chain reaction, have demonstrated the highest levels of sensitivity and specificity. The high diagnostic efficiency of PCR is due to the ability to detect pathogen DNA fragments even with minimal microbial load.

This is especially important when examining women with asymptomatic infection and when conducting screening programs.

However, the use of PCR does not allow obtaining information about the drug resistance of the pathogen, which limits its independent use in clinical practice.

In this regard, the optimal strategy is the combined use of molecular and cultural methods, which provides a comprehensive assessment of the patient's condition. The immunological methods used in the study showed moderate diagnostic effectiveness.

The detection of specific antibodies reflects the body's immune response to infection, but does not allow differentiation between an active and a transferred process. This limits the use of serological tests as primary diagnostic tools, especially in initial screening.

Analysis of the structure of identified cases demonstrated a high frequency of combined urogenital infections. The presence of mixed infections significantly distorts the clinical picture, reduces the sensitivity of traditional methods and requires extensive laboratory examination.

In such situations, the use of multiplex PCR systems is the most rational approach. The data obtained on antibiotic resistance confirm the global trend towards a decrease in the sensitivity of Neisseria gonorrhoeae to the main groups of antimicrobial drugs.

The high level of resistance to penicillins and fluoroquinolones indicates the need for constant monitoring of pathogen susceptibility and revision of standard treatment regimens.

An important aspect of the discussion is the influence of organizational and socio-economic factors on the quality of diagnosis. Insufficient equipment of laboratories, limited access to molecular technologies, as well as a shortage of qualified specialists in a number of regions, lead to uneven diagnostic capabilities and an increase in the proportion of undiagnosed cases.

It should be noted that errors at the stage of collection and transportation of biomaterial remain one of the key reasons for obtaining false results. Violation of the temperature regime, non-compliance with delivery deadlines and incorrect technique for taking smears significantly reduce the reliability of laboratory tests.

This highlights the need for strict adherence to preanalytical standards. A comprehensive analysis of the data obtained indicates the feasibility of introducing multi-level diagnostic algorithms based on a combination of clinical assessment, microbiological and molecular methods.

This approach allows us to minimize the risk of diagnostic errors and increase the efficiency of detecting gonorrheal infection. The preventive focus of diagnostics is of particular importance. Early detection of asymptomatic forms of the disease helps reduce prevalence of infection, prevention of complications and preservation of reproductive health of women. In this regard, expanding screening programs using highly sensitive methods is an important direction for the development of the healthcare system.

The results obtained are consistent with the data of international studies confirming the leading role of PCR in the modern diagnosis of STIs. However, adapting these technologies to the conditions of the national healthcare system requires taking into account economic, organizational and personnel factors.

Thus, clinical and laboratory diagnosis of gonorrhea in women is a complex multi-stage process that requires the integration of modern technologies, professional training of specialists and strict adherence to examination standards.

The study confirms the high relevance of the problem of clinical and laboratory diagnosis of gonorrhea in women in modern conditions of healthcare development. Features of the clinical course of the disease, expressed in the predominance of asymptomatic and latent forms, significantly complicate timely detection infections and contribute to the formation of chronic inflammatory processes and reproductive disorders. The results obtained indicate that the use of isolated laboratory methods does not provide sufficient diagnostic reliability.

The least informative in female practice is the microscopic method, the sensitivity of which is significantly reduced at low concentrations of the pathogen and the presence of accompanying microflora.

Molecular genetic methods are characterized by the highest diagnostic efficiency, in particular the polymerase chain reaction, which ensures the identification of the pathogen in the early stages of the disease and in asymptomatic cases of infection.

However, the limited information on the resistance of the microorganism requires the mandatory addition of PCR with a cultural analysis. A comprehensive diagnostic approach based on a combination of clinical assessment, microbiological and molecular studies,

allows you to significantly increase the accuracy of diagnosis, reduce the risk of false negative results and ensure timely initiation of therapy. This approach helps prevent complications, preserve women’s reproductive health and reduce the epidemiological prevalence of gonorrhea.

Thus, clinical and laboratory diagnosis of gonorrhea in women should be considered as a multi-level integrated system that provides a scientifically based basis for clinical and preventive measures.

References

1. Clinical guidelines for the diagnosis and treatment of sexually transmitted infections. - M.: Ministry of Health of the Russian Federation, 2023. - 156 p.
2. World Health Organization. Global report on the epidemiology of sexually transmitted infections. - Geneva: WHO, 2022. - 214 p.

3. Lopatin A.S., Ivanova N.V. Laboratory diagnosis of urogenital infections. - St. Petersburg: Medical literature, 2021. - 320 p.
4. Workowski K.A., Bachmann L.H., Chan P.A. et al. Sexually Transmitted Infections Treatment Guidelines, 2021. — MMWR Recomm Rep. — 2021. — Vol. 70. — №4. — P. 1–187.
5. Sherrard J., Wilson J., Donders G. et al. 2018 European guideline on the diagnosis and treatment of gonorrhoea. — International Journal of STD & AIDS. — 2018. — Vol. 29. — №13. — P. 1–15.
6. Unemo M., Seifert H.S., Hook E.W. et al. Gonorrhoea. — Nature Reviews Disease Primers. — 2019. — Vol. 5. — Article №79.
7. Deguchi T., Yasuda M. Molecular diagnosis of Neisseria gonorrhoeae infections. — Journal of Infection and Chemotherapy. — 2020. — Vol. 26. — №4. — P. 323–329.
8. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance. — Atlanta: CDC, 2022. — 198 p.
9. Rakhimova D.T., Abdullaev Sh.M. Modern aspects of diagnosing STIs in women. — Tashkent: Medicine, 2021. — 184 p.
10. World Health Organization. WHO guidelines for the treatment of Neisseria gonorrhoeae. - Geneva: WHO, 2016. - 64 p.