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MODERN MICROBIOLOGICAL DIAGNOSIS OF VAGINAL CANDIDIASIS

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ABSTRACT

The modern microbiological diagnostic methods for Candida albicans, the most prevalent and active fungus in the vaginal microbiome of women, were analyzed. Based on laboratory examination results, diagnostic research conducted by the cultivation method is emphasized for practical use. Practical examples confirming the effectiveness of modern microbiological diagnostic methods are provided. Additionally, the integration of microbiological laboratory diagnostics is emphasized to improve women's health and prevent vaginal diseases. This thesis explores one of the issues of microbiological diagnosis of vaginal Candida albicans within the integration of gynecology and microbiology. The importance of applying microbiological diagnostic methods in gynecological practice is also discussed.

Key words: Sabouraud agar, Sabouraud dextrose, fungus, 1% sugar broth, Candida albicans.

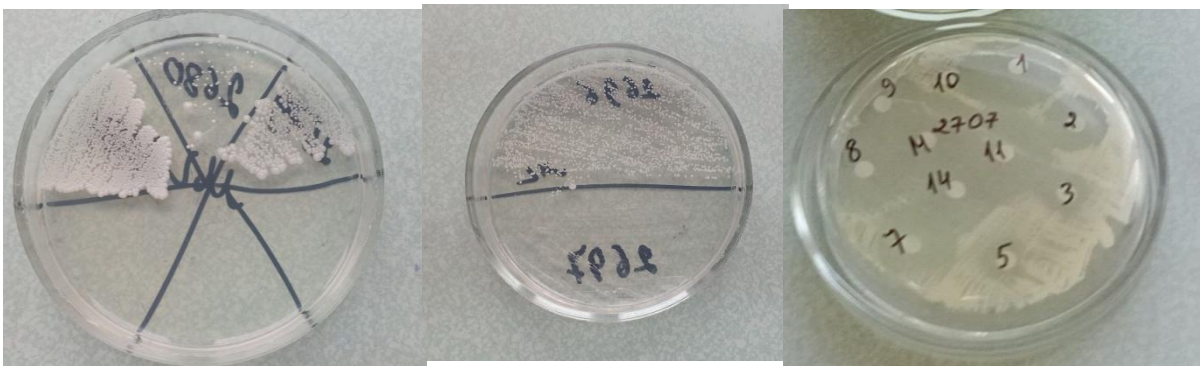
INTRODUCTION

75% of women experience symptomatic infections at least once in their lifetime. The *Candida albicans* species accounts for approximately 85% of vaginal candidiasis cases [3]. Fungal infections kill 1.6 million people every year [4].

People at risk of fungal infections include those with genetic predisposition and acquired immunodeficiency. In patients infected with this condition, the mortality and morbidity rates are high, ranging from 40% to 60%. *Candida albicans* is a newly emerging antifungal-resistant fungal pathogen. Invasive candidiasis (IC) results in high morbidity and mortality rates in patients receiving long-term hospital care. The use of antibodies, antigens, BDG, and PCR is increasingly common for detection. Magnetic resonance, MALDI-TOF and fluorescence-based approaches are promising diagnostic tools [5].

The objective was to study the analysis and results of laboratory methods used for timely and accurate diagnosis in practice.

The research was conducted at the bacteriological laboratory of the multi-disciplinary clinic of Tashkent Medical Academy. The study involved a total of 26 patients, carried out in October. Women with symptoms of vaginal candidiasis, regardless of their age or previous treatments, were included. During the diagnosis of *Candida albicans* infection, tampon samples were taken from the vagina, urethra, and uterine cervix of the patients. These samples were sent to the microbiological laboratory, where they were initially placed in a 1% sugar broth tube. The main reason for this was that if no bacterial growth was observed after 24 hours, the sugar broth could be used again for up to 5 days (until bacterial growth is observed). Subsequently, the tampon was inoculated onto Sabouraud dextrose agar, which is considered the most effective medium for growing *Candida albicans*. The yeast cells of *Candida albicans* grow exponentially in glucose and are highly sensitive to heat shocks (52.5°C for 5 minutes). The inoculated Candida albicans was placed in a thermostat at 37°C and incubated for 48–72 hours. If growth is observed within 48 hours, a diagnosis of *Candida albicans* infection can be made [2]. On Sabouraud dextrose agar, *Candida albicans* develops as white and pearl-like colonies .



1-picture The Rate of *Candida albicans* and Its Antibiotic Sensitivity

After growth, we check the antibiotic resistance, which can be observed by applying special discs. The antibiotic sensitivity of *Candida albicans* infection was

studied during the research. According to the study results, the following antibiotics were found to be effective: Dermazole, Nystatin, Fluconazole, Clotrimazole, Fucis, Mikoflu, Biflurin and Siksan. To determine the level of antibiotic resistance, analysis results were obtained from a total of 56 patients.

Table 2.

The Antibiotic Resistance Level of Candida albicans

Antibiotic names:	Number of patients: n=56	Percentage %
DERMAZOL	56/12	21.42%
NYSTATIN	56/8	14.3%
FLUCONAZOLE	56/5	8.9%
CLOTRIMAZOLE	56/5	8.92%
FUCIS	56/6	10.71%
MIKOFLU	56/2	3.57%
BIFLURIN	56/8	14.28%
SIKSAN	56/10	17.85%

Based on the results of the table, antibiotics such as Fluconazole, Mikoflu and Fucis showed high sensitivity, which supports their recommendation as effective treatment options. The study results indicate that in clinical practice, antibiotics with high sensitivity should be preferred to form an effective treatment plan.

Methods. Currently, accurate and effective diagnosis of *Candida albicans* infection is of crucial importance. Diagnostic methods used include: microscopy; cultivation; polymerase chain reaction (PCR); and immunological tests [1], which provide the possibility of detecting the infection in its early stages. The correct and effective use of these diagnostic methods plays a key role in the rapid and accurate identification of the disease.

Results. The study was conducted in October, with a total of 26 patients participating.

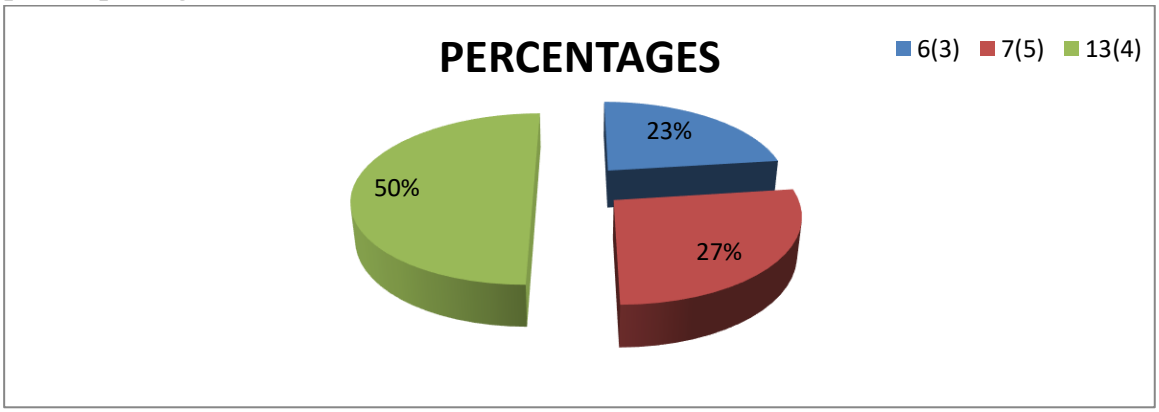


Diagram 1. Number of Patients and Percentage Rates Based on the Occurrence of *Candida albicans*

Table 1.

Distribution of the Occurrence Rate of *Candida albicans* and the Number of Patients at the Multi-Specialty Clinic of Tashkent Medical Academy

Number of patients:	Candida level:	Percentage %
6	10^3	23%
7	10^5	27%
13	10^4	50 %

By using the culture method, the test results for the patient are ready within 4-5 days and are provided to the patient. However, as an advantage of the culture method, this technique requires more time because it takes time for the microorganisms to grow and be identified. Through the results of this process, the level of *Candida albicans* infection is determined, and the necessary measures for treatment are taken.

Conclusion. Diagnostic standards help to improve accuracy in the early stages of infection, which positively enhances the effectiveness of treatment. Based on the tampon analysis results of patients infected with *Candida albicans*, the necessary information and results were analyzed. During the research, which lasted for one month, the antibiotic sensitivity of *Candida albicans* was found to be positive in 21 (37.46%) women. Analysis of the prevalence rate shows that no results above 10^5 were recorded in practice, and no high-concentration infections were found. This indicates that further study of the patients' condition is required, which will help optimize their treatment strategies.

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