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SEASONAL ANALYSIS OF VAGINAL DISCHARGE IN WOMEN OF REPRODUCTIVE AGE IN GOMEL

Introduction

Vaginal microbiota represents a complex and dynamic ecosystem that plays a critical role in maintaining the physiological balance of the female reproductive tract. It consists predominantly of Lactobacillus species, which contribute to maintaining an acidic environment and preventing colonization by pathogenic microorganisms [1]. Disruption of this balance may lead to conditions such as bacterial vaginosis, vulvovaginal candidiasis, and sexually transmitted infections [1, 2].

The vaginal microbiome is influenced by a wide range of endogenous and exogenous factors. Hormonal fluctuations, particularly estrogen levels, play a crucial role in regulating glycogen production in vaginal epithelial cells, thereby supporting the growth of Lactobacillus species. These bacteria maintain a low pH (3.8–4.5), which inhibits the proliferation of pathogenic organisms. Along with hormonal status, exogenous factors, including climatic conditions and seasonality, have a significant impact on the microbiocenosis, potentially modulating both local immunity and microflora composition [2].

Despite the clinical importance of vaginal microbiota, seasonal patterns in the prevalence of specific pathogens remain underexplored. This study assessed the prevalence of elements of abnormal flora (yeast-like cells, leptotrichia, trichomonads, diplococci) in women of reproductive age during different seasons (winter, spring, summer, autumn). The relevance of this work stems from the necessity to identify temporal risk factors for specific infectious agents [3, 4]. Understanding seasonal dynamics will facilitate the optimization of screening programs and enhance the effectiveness of preventive measures in gynecological practice.

Goal

The aim of the study was to evaluate the seasonal distribution of microscopic findings in vaginal smears among women of reproductive age and to identify variations in the frequency of inflammatory markers and infectious agents.

Material and methods of research

A retrospective observational study was conducted at the "Belsono" Medical Center. The study included 5103 women aged 18–44 years who presented for an initial gynecological consultation between January and December 2025. The reasons for the visit included preventive medical check-ups, as well as complaints of pathological discharge and menstrual cycle irregularities.

Vaginal secretions served as the study material. Smears were stained using the Romanowsky-Giemsa method, followed by microscopy at ×100 and ×1000 magnification. The following microscopic parameters were evaluated: leukocytosis (as a marker of inflammation), abnormal flora (a sign of dysbiosis), yeast-like cells, Leptotrichia, trichomonads, and diplococci. Data were categorized into four seasons: winter, spring, summer, and autumn. Exclusion criteria included incomplete medical records. Statistical analysis involved frequency analysis with the calculation of

absolute (n) and relative (%) values. The Pearson Chi-square (χ^2) test was used to compare categorical variables across the seasons. A p-value of less than 0.05 was considered statistically significant.

The results of the research and their discussion

The distribution of microscopic findings by season is presented in Table 1.

Table 1 – Distribution of vaginal swab findings by season in women aged 18–44 years

Season	Total, n	Leukocytes, n (%)	Coccal flora, n (%)	Coccobacillary flora, n (%)	Key cells, n (%)	Leptotrichia, n (%)	Yeast-like cells, n (%)	Diplococci, n (%)	Trichomonas-like cells, n (%)
Winter	1198	215 (17,9%)	81 (6,8%)	60 (5%)	35 (2,9%)	44 (3,7%)	194 (16,2%)	1 (0,08%)	2 (0,17%)
Spring	1314	204 (15,5%)	70 (5,3%)	67 (5,6%)	21 (1,6%)	22 (1,8%)	178 (13,5%)	4 (0,3%)	1 (0,08%)
Summer	1287	232 (18,0%)	100 (7,8%)	87 (6,8%)	44 (3,4%)	65 (5,1%)	230 (17,8%)	5 (0,4%)	1 (0,08%)
Autumn	1264	237 (18.8%)	92 (7,3%)	49 (3,9%)	19 (1,5%)	49 (3,9%)	216 (17,1%)	8 (0,63%)	0 (0%)

Analysis of the inflammatory marker revealed that leukocytosis was observed in 15.5% to 18.8% of cases, with the highest rates recorded in autumn (18.8%) and summer (18.0%), though these variations were not statistically significant ($\chi^2 = 4,7$, p =0,1).

Significant seasonal differences were identified for several indicators of vaginal microbiota imbalance. Coccal flora was most frequently detected in summer (7.8%) and winter (6.8%), showing statistically significant variations compared to other seasons ($\chi^2 =6,9$, p =0,07). Similarly, coccobacillary flora demonstrated a distinct seasonal pattern with a peak prevalence in summer (6.8%) and the lowest rate in autumn (3.9%) ($\chi^2 =10,9$, p =0,01).

The presence of key cells, indicative of bacterial vaginosis, varied significantly across seasons ($\chi^2 =15,3$, p =0,002) with the highest frequency observed in summer (3.4%) and winter (2.9%), while spring and autumn showed lower rates (1.6% and 1.5%, respectively). A significant seasonal trend was also noted for Leptotrichia, where the detection rate was nearly three times higher in summer (5.1%) compared to spring (1.8%) ($\chi^2 =22,4$, p <0,001).

Yeast-like cells were the most common finding among all pathological changes, detected in 13.5% to 17.8% of patients. The prevalence was significantly higher in winter (16.2%) and summer (17.8%) compared to spring (13.5%) ($\chi^2 =10,2$, p =0,016). Conversely, the detection of intracellular and extracellular diplococci and Trichomonas-like cells was rare (less than 1% across all seasons), and no statistically significant seasonal differences were found for these pathogens (p>0.05)

The results obtained demonstrate a pronounced seasonal dependence of changes in the vaginal microbiocenosis. The peaks in the detection of pathological changes during the summer period, characterized by an increase in coccal and coccobacillary flora, key cells, and Leptotrichia, are likely associated with the influence of exogenous factors: high air temperature and increased humidity, which create favorable conditions for the activation of opportunistic microflora. Wearing synthetic underwear and swimming in open water during the summer season may also contribute to aeration disruption and changes in the pH of the vaginal environment. The winter period, along with summer, became a peak time for the detection of yeast-like fungi, which may be due to the "greenhouse effect" caused by wearing warm clothing, as well as a decrease in general body resistance and hypovitaminosis during the cold season. The absence of statistically significant differences for diplococci and trichomonads is explained by their low prevalence in this sample and the specifics of their transmission (predominantly sexual route), which depends less on seasonal climatic fluctuations than infectious processes caused by opportunistic flora.

Conclusions

Based on a retrospective analysis of 5103 vaginal smears, it was established that the condition of the microflora in women of reproductive age has a significant seasonal dependence. The summer period proved to be the most unfavorable in terms of bacterial dysbiosis, recording the highest prevalence rates of coccal (7.8%) and coccobacillary (6.8%) flora, key cells (3.4%), and Leptotrichia (5.1%). Candida lesions (yeast-like cells) are characterized by a bimodal seasonality with incidence peaks in winter (16.2%) and summer (17.8%). Spring and autumn periods were the most favorable for maintaining normocenosis. The obtained data justify the necessity of implementing season-specific preventive measures: in the summer period, special attention should be paid to hygiene and avoiding overheating, while in winter, the prevention of immune deficiency states is crucial.

LITERATURE

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SENSITIZATION SPECTRUM OF HOME ALLERGENS IN CHILDREN

Introduction

Allergic diseases represent a global health problem [1]. They are often caused by exposure to aeroallergens – protein particles found in the environment. Upon exposure, the immune system of susceptible individuals produces specific Immunoglobulin E (sIgE) antibodies, initiating a cascade of inflammatory responses [2]. Clinical manifestations vary depending on the type of allergen and the route of exposure, presenting with sneezing, itchy eyelids, and bronchial obstruction.

This study focuses on analyzing sensitization to six common inhalant allergens:

– House Dust Mites (Dermatophagoides pteronyssinus and Dermatophagoides farinae): These are leading indoor allergens. Their population thrives in high-humidity conditions (bedding, furniture, carpets), causing the development of allergic rhinitis and bronchial asthma.

– Storage Mite (Glycophagus domesticus): This mite inhabits food storage areas with high humidity. Sensitization is frequently observed in individuals working with food products and manifests as symptoms of rhinitis and asthma.

– Molds and Yeasts (Candida albicans, Aspergillus fumigatus, Mucor mucedo): These are ubiquitous microorganisms found in soil, organic debris, and damp indoor spaces. Aspergillus fumigatus is a key trigger for allergic bronchopulmonary aspergillosis (ABPA), Candida albicans induces respiratory and skin reactions, and Mucor mucedo can provoke symptoms of rhinitis and asthma, including chronic cough and nasal congestion.

Diagnosis of sensitization is based on detecting sIgE in blood serum. A level exceeding 0.35 IU/mL is accepted as the threshold for a positive result. The degree of sensitization is classified