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.

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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

according to IgE concentration, reflecting the intensity of the immune response and its clinical significance [3, 4].

Considering the high prevalence of mite and fungal allergens in residential premises and their significant role in the formation of resistant bronchial asthma in children, studying the structure of sensitization to these allergen groups is extremely relevant.

Goal

The study aimed to investigate the level and structure of sensitization to indoor inhalant allergens in children of the Gomel region. The objectives included determining the prevalence of sensitization and identifying the allergens that most frequently induce high concentrations of specific Immunoglobulin E (sIgE) in the study cohort.

Material and methods of research

The study included 90 patients (55 males and 35 females) aged 2 to 18 years, who were examined at the Gomel Regional Children's Clinical Hospital from January to December 2024. All patients underwent allergy testing using the immunoblotting method with a respiratory allergy panel. Serum levels of specific Immunoglobulin E (sIgE) were measured for six inhalant allergens: Dermatophagoides pteronyssinus, Dermatophagoides farinae, Candida albicans, Aspergillus fumigatus, Glycophagus domesticus, and Mucor mucedo. The results were quantified in IU/ml and classified into the following sensitization classes: Class 0 (<0.35 IU/ml – absent), Class 1 (0.35–0.70 IU/ml – low level), Class 2 (0.71–3.49 IU/ml – elevated level), Class 3 (3.50–17.49 IU/ml – high level), Class 4 (17.5–49.9 IU/ml – very high level), Class 5 (50.0–100.0 IU/ml – extremely high level), and Class 6 (>100 IU/ml – ultra-high level). Statistical analysis was performed using the «Statistica» 12.5 software package. Frequency analysis was conducted to determine the prevalence of sensitization.

The results of the research and their discussion

Results and Discussion Analysis of the obtained data (Table 1) showed that mite allergens dominate the structure of sensitization to inhalant allergens. *Dermatophagoides farinae* holds the leading position in terms of frequency (38.8%), followed by the storage mite *Glycophagus domesticus* (35.5%), and *Dermatophagoides pteronyssinus* (32.2%). The high frequency of sensitization to *Dermatophagoides* mites confirms their key role as triggers of allergic diseases in domestic conditions. However, the significant prevalence of sensitization to *Glycophagus domesticus* indicates the importance of exposure to storage allergens, which may be related to dietary habits or cross-reactivity.

Table 1 – Samples indicating patients with levels of sIgE

Allergen	Positive sample rate											
	>0.35		>0.70		>3.5		>17.5		>50		>100	
	n	%	n	%	n	%	n	%	n	%	n	%
Dermatophagoides pteronyssinus	29	32.2	23	79.3	14	60.8	1	7.1	0	0	0	0
Dermatophagoides farinae	35	38.8	27	77.1	16	59.2	1	6.2	1	100	1	100
Candida albicans	7	7.7	3	42.8	0	0	0	0	0	0	0	0
Aspergillus fumigatus	5	5.5	3	60	0	0	0	0	0	0	0	0
Glycophagus domesticus	32	35.5	17	53.1	4	23.5	1	25	0	0	0	0
Mucor mucedo	12	13.3	8	66.6	1	12.5	0	0	0	0	0	0

When analyzing the intensity of the immune response (classes 3–6), *D. farinae* was found to possess the greatest sensitizing potential. Although the overall frequency of sensitization

to *D. pteronyssinus* and *G. domesticus* was comparable, *D. farinae* more frequently induced extremely high sIgE concentrations (reaching Class 6). This indicates that this mite species is capable of inducing the most severe forms of allergic reactions. Sensitization to molds (*Mucor mucedo*, *Candida albicans*, *Aspergillus fumigatus*) was registered significantly less frequently (from 5.5% to 13.3%) and was characterized by low specific IgE levels, suggesting lower clinical significance of fungal allergens in this patient sample.

Conclusions

Analysis of specific IgE levels revealed the dominance of mite allergens in the sensitization structure of the examined patients. The leading positions in terms of prevalence were occupied by *Dermatophagoides farinae* (38.8%), *Glycophagus domesticus* (35.5%), and *Dermatophagoides pteronyssinus* (32.2%). Of clinical significance is the fact that *D. farinae*, along with high prevalence, possesses the greatest sensitizing potential: Class 6 indicators (extreme level >100 IU/ml) were recorded specifically for this allergen, whereas maximum levels for other mites did not exceed Class 4. Sensitization to molds was registered significantly less frequently (from 5.5% to 13.3%) and was characterized by low IgE levels (predominantly Classes 1–2). The obtained data substantiate the necessity of prioritizing mite elimination measures (maintaining low humidity, use of barrier covers) within the complex of therapeutic and preventive interventions.

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