

**HYGIENIC ASSESSMENT OF PATIENTS' SUSCEPTIBILITY TO  
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**Anotation:**The scientific article is devoted to the study of the prevalence of sensitization to food products and mushrooms, as well as its prevention in hot climates. Today, mushrooms are known in different countries of the world as an etiological factor of allergic diseases. In patients with allergic diseases, based on a detailed anamnesis and using modern methods in In vitro diagnostics can detect sensitivity to fungal allergens. In hot climates, detection of immunoglobulin E antibodies to mold and yeast fungi such as *Aspergillus*, *Penicillium*, *Cladosporium*, *Alternaria* and *Rhizopus* is only possible with a personalized approach to diagnostics and therapy.

**Key words:** food products, fungal allergens, allergen-specific immunoglobulins E, atopy, environmental factors.

**ENTRANCE**

In humans, fungal infections often cause immediate allergic reactions with immunoglobulin E (IgE) mediated mechanisms. Patients sometimes also develop type II, III, and IV allergic diseases [12]. In patients with fungal sensitivity, allergic reactions to house dust mites, pet allergens, and foods may also occur due to changes in the immune system. One of the unique features of fungal allergens is that they can be present both indoors and outdoors at different times of the year, so patients may experience symptoms throughout the year [13].

Fungal allergens are part of outdoor bioaerosols and can cause allergic rhinitis, conjunctivitis, bronchial asthma and allergic bronchopulmonary mycosis. At the same time, mold fungi have a more significant impact on the immune system of patients than plant pollen or other household allergens [11].

**DISCUSSION AND RESULTS**

Currently, constant contact with the fungus leads to colonization of the respiratory tract and the appearance of disease symptoms [6].

Fungal spores can provoke an immune response leading to the production of IgG and IgA [9]. Mycogenic allergy is often accompanied by polyvalent sensitization.

Observations have shown that in 20–65% of people suffering from allergic diseases, the causative allergen is fungal allergens, and 20–25% of them have bronchial asthma [2]. In approximately 3–6% of cases, the development of bronchial asthma can be caused by fungal spores. A high content of fungal spores is inextricably linked with the sanitary and epidemiological characteristics of human living conditions, geographic region, environmental factors, and season. The penetration of fungal spores into the human respiratory tract depends

on their size, and the smaller they are, the deeper they penetrate into the respiratory tract (most often their size is from 1 to 40  $\mu\text{m}$ ) [2, 9].

It is known that fungi of the genus *Rhizopus* are dangerous because they live in humid conditions and usually spread as black mold when bakery products are stored incorrectly. Fungi of the genus *Cladosporium* also live in relatively humid conditions and are very sensitive to moisture deficiency. Fungi are preserved in cheese, cereals, grain products and plants [13].

Often, general practitioners, without taking into account the characteristics of allergens, conduct empirical therapy. Only with the help of a complete and carefully collected anamnesis can a positive mycotic anamnesis be predicted. In this case, it is recommended to pay attention to the following aspects:

**1. Most patients** are unaware that their symptoms are related to their living or working conditions. They do not even think to tell the doctor that their symptoms appeared after a change in their home or work conditions. Sometimes, after collecting a complete anamnesis, the doctor has to find the allergen-"culprit" himself. Because microscopic fungi, invisible to the naked eye, affect the course of bronchopulmonary diseases in sensitive patients in residential premises. At the same time, climatic conditions, geographic region to a certain extent affect the composition of micromycetes and biochemical processes. Conidia of some fungi (*Alternaria alternata*, *mucor spr.*, *Penicillium spr.*, *Aspergillus spr.*) penetrate through the respiratory tract and cause allergic reactions, internal mycoses (*Aspergillus flavus*, *Asp. fumigatus*, *Asp. niger*) and mycotoxicoses (*Alternaria alternata*, *Aspergillus flavus*, *Asp. fumigatus*) [3, 5].

*Cladosporium herbarum* is widely distributed in the environment and is considered a major source of inhalant fungal allergens. *Cladosporium herbarum* is also found in rotting grass and tree branches, among weeds, in textiles and food products. *Cladosporium herbarum* is also found on the leaves of temperate plants under favorable conditions, and its allergenic proteins can cause life-threatening asthma attacks and upper respiratory symptoms [13].

*Alternaria* spores are present in the air of some cities throughout the year, with peak concentrations in spring, summer and autumn. A number of meteorological factors, including air temperature and barometric pressure, correlate with *Alternaria* spore concentrations [13]. *Alternaria* is a major allergen causing illness in children; in temperate climates, *Alternaria* spores are detected from May to November, with highest concentrations in summer and autumn. Spore dispersal occurs during dry periods of high wind speed and low humidity, at midday when the sun is directly overhead. Despite the spores' large size, they can fly long distances; in areas with cereals and wild grasses, *Alternaria* spores can be dispersed in 1 cubic metre of air on dry, windy days. Up to 7,500 spores per cubic metre of outdoor air and up to 280 spores per cubic metre of indoor air have been detected [13, 15].

**2. Fungi** are widespread and widely used in the food industry, livestock farming, poultry farming, flour milling, cheese making, brewing, wine production, agriculture, gardening and pharmaceuticals for the production of yeast and enzyme preparations. Patients with allergic diseases often develop increased sensitivity to fungi, which can manifest itself as suffocation or attacks of malaise after being in damp rooms, basements, vegetable and fruit storage facilities, archives, swimming pools and metro stations [7].

**3. In patients** with respiratory diseases, frequent illnesses and a history of mycotic infections (candidiasis, **sputum** and nasal smear culture, detection of fungi in stool analysis, onychomycosis, dermatophytosis, etc.), the condition may worsen, especially in the autumn-spring months (the period of fungal spore formation). When collecting anamnesis from patients, it is usually necessary to pay attention to a history of frequent colds, rhinosinusitis, obstructive

bronchitis. Patients living on the first floor or in humid conditions are more often diagnosed with "asthmatic bronchitis" or "bronchitis with an asthmatic component" in their outpatient cards. In most patients, bronchial asthma develops after the clinical manifestation of recurrent obstructive bronchitis [7, 10].

4. Stress of various origins leads to a significant decrease in immunity, as a result of which the negative impact of pathogenic microorganisms, including fungi, increases.

5. Violation of food storage rules, violation of hygienic rules and conditions during their transportation creates an environment for the development of various pathogenic fungi in products, including *Candida* (more often in dairy products), *Rhizopus* (black mold on bread, vegetables and fruits, especially onions), *Alternaria alternata* (in the form of black dots on potatoes, tomatoes), *Botrytis cinerea* (gray mold on grapes, cabbage, lettuce, tomatoes), *Aspergillus* (black spots on tea bags, black pepper, coffee, fruits, confectionery). In children with atopic dermatitis and hypersensitivity to fungi, symptoms appear after consuming contaminated dairy products, vegetables and fruits, moldy cheeses, fermented bakery products and home-canned food, and in adults - after consuming vegetables, jam, beer, champagne, wine, kvass, kefir (i.e. fermented milk products), yeast bread and sourdough products. Most often, allergic reactions are caused by fungi of the genera *Candida*, *Alternaria* and *Aspergillus* [13].

These allergen panels can now be used to diagnose and effectively treat children, pregnant women, nursing mothers and people of all ages.

#### CONCLUSION

Today, the possibilities for determining sensitivity to fungi have expanded, which required new approaches to developing preventive, diagnostic and treatment programs for doctors in various fields of medicine. An individual approach to each patient and a complete collection of anamnesis allow us to prevent the development of severe complications of the disease.

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