



**HYGIENIC ASSESSMENT OF LIVING CONDITIONS AND PROPER
NUTRITION OF PATIENTS WITH PENICILLIUM AND ASPERGILLUS
FUNGI**

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Abstract

The scientific article is devoted to the study of the prevalence of sensitization to food and fungi, as well as its prevention in a hot climate. To date, fungi are known in different countries of the world as an etiological factor of allergic diseases, in patients with allergic diseases, based on a detailed medical history and with the help of modern in vitro diagnostics, it is possible to detect sensitivity to fungal allergens. In hot climates, the detection of immunoglobulin E antibodies to mold and yeast fungi such as Aspergillus, Penicillium, Cladosporium, Alternaria and Rhizopus and only with the help of a personalized approach to diagnosis and therapy can be achieved.

Key words

food, fungal allergens, allergenspecific immunoglobulins E, atopy, environmental factors.

**PENICILLIUM VA ASPERGILLUS ZAMBURUG'I BO'LGAN
BEMORLARNI YASHASH SHAROITI VA TO'G'RI OVQATLANISHINI
GIGIYENIK BAHOLASH**

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Annotatsiya

Ilmiy maqola O'zbekiston sharoitida oziq-ovqat mahsulotlari va ularda uchrovchi bir qancha zamburug'larining insonda sezuvchanligining o'rganish, uni gigiyenik baholash va unga qarshi profilaktik chora tadbirlar ishlab chiqishga bag'ishlangan. Hozirgi kunda yurtimiz va dunyo mamlakatlarida ko'plab zamburug'larning insonga allergik kasalliklarni keltirib chiqarishi va uning etiologik omili sifatida ma'lum bo'lishi, bemorlardan olingan to'liq yig'ilgan anamnezlar asosida va in vitro ilg'or zamonaviy tekshiruvlar yordamida zamburug'lar keltirib chiqaruvchi allergenlariga sezuvchanlikni baholash mumkin. Issiq iqlimsharoitida Penicillium va Aspergillus kabi zamburug'lariga nisbatan immunoglobulin E antitanachalarni erta aniqlab tashxislash va uni davolashda chuqur yondashuvlar natijasida muvaffaqiyatga erishish mumkin.

Kalit so'zlar

zamburug' allergenlari, oziq-ovqat mahsulotlari, allergen maxsus immunoglobulin E, atopiya, tashqi muhit omillari.

ГИГИЕНИЧЕСКАЯ ОЦЕНКА УСЛОВИЙ ЖИЗНИ И ПРАВИЛЬНОГО ПИТАНИЯ БОЛЬНЫХ ПЕНИЦИЛЛОВЫМИ И АСПЕРГИЛЛОВЫМИ ГРИБАМИ

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Аннотация

За последние десятилетия аллергические заболевания имеют тенденцию к росту, значительный вклад в увеличении заболеваемости вносит грибковая сенсибилизация. По данным литературных источников, показатели частоты сенсибилизации к грибам в зависимости от региона проживания варьируют в широких пределах (от 2 до 60%) в зависимости от вида гриба и принадлежности пациентов к группам риска развития микогенной аллергии. В то же время существует гиподиагностика сенсибилизации к грибам, когда грибы не учитываются в качестве этиологического фактора, что приводит к недостаточной эффективности стандартных методов терапии аллергических заболеваний [1]

Ключевые слова

грибковые аллергены, пищевые продукты, аллергенспецифические иммуноглобулины E, атопия, факторы окружающей среды.

Relevance of the topic.

Molds play an important role in the development of allergic diseases. In the immune system, under the influence of antigenic structures of fungi, various pathological processes are formed, including type I allergic reactions caused by I aE mechanisms, as well as types II , III , and IV allergic reactions [7, 8]. Micromycetes are able to colonize the respiratory tract and cause constant allergenic stimulation [7]. Long-term persistence of spores in the body contributes to the development of immune responses with the formation of specific IgG And IGA [9]. Mycogenic Allergization often manifests itself in the form of a polyvalent sensitization to several types of fungi [3].

According to studies, in 76.5% of apartments with visual signs of mold damage, the concentration of fungal spores is higher conditionally permissible norm - 500 CFU / m³. Predominant fungi are Penicillium spp . (92.5% detection in indoor air), Aspergillus spp . (81.1%) Cladosporium spp . (34.4%), as well as Rhizopus spp . (34.4%). At the same time, a high correlation was established between the detection of micromycete spores in indoor air and the presence of specific IgE to fungal allergens in the blood serum of residents of these premises [5].

Sources of indoor fungal spores can be both outside and inside the building. In



the northern climate , during cold and snowy weather, spores from the external environment practically do not enter the house. During the warm period, houses in both the US and Europe were dominated by molds Cladosporium , Alternaria , Epicoccum , Fusarium and, to a lesser extent, Penicillium and Aspergillus during the frost-free season [11].

Penicillium notatum or green mold is a genus of mushrooms from the group of ascomycetes, about 250 species are known. Penicillium notatum It is very widespread in the soil, found in temperate zones in forests, fields and arable soils. It can be isolated from decaying leaves and vegetables . It is also found in harvested grain, hay. Spores are easily released into the air. Penicillium notatum is one of the most common indoor molds. It is found on stale bread, fruits, and nuts and is used to make blue and green cheese. Penicillium notatum does not show much seasonal variation, but peaks in winter and spring. Mold spores easily enter the respiratory tract, which, in the presence of predisposing factors, leads to the development of allergic diseases.

Mold spores and fragments are ubiquitous and can cause year-round allergic symptoms. Mushrooms are both external and internal sources of allergens. On the street, microscopic fungi actively multiply in the soil, foliage. In rooms, mold spores are part of the dust. Food storage areas, soiled upholstery, garbage containers, other organic substrates, ordinary wallpaper, synthetic materials that retain moisture for a long time, air conditioners, flower pots can serve as places for the growth of fungi. In addition, mushrooms are able to grow on other surfaces in the presence of the right humidity. Basement or cold exterior walls, window moldings, shower curtains, and fixtures are also typical fungal growth sites. In the air, the concentration of fungal spores increases when airing damp rooms.

The purpose of this work is: to develop measures for the rational nutrition of patients with sensitivity to fungi of the genus Penicillium and Aspergillus .

Materials and methods of research . The materials for the study are the blood serum of patients with allergies and sensitivity to fungi of the genus Penicillium and Aspergillus .

The studies were carried out at the Department of Hygiene for Children, Adolescents and Nutrition (TMA).

It should be noted that in the practice of general practitioners, therapy is often carried out empirically, without taking into account the characteristics of allergens that determine the prognostic significance. It should be noted that a complete and carefully collected history may suggest a positive mycotic history. When taking anamnesis, pay attention to the following aspects.

In most cases, allergic reactions to fungi remain beyond the attention of specialists. Lack of diagnostics contributes both to the long course of AD and to the



chronicity of the process. According to studies, sensitization to fungi in patients is quite high. In the Republican Scientific and Specialized Allergological Center, Surkhandarya and Khorezm Regional Multidisciplinary Medical Center, latent sensitization to fungi of the Penicillium family was detected in patients in the blood serum notanum , Candida albicans , Cladosporium herbatum , Mucor musedo , Rhizopus nigricans , Alternaria aalternata , mixed Aspergilli and professional latex allergen.

Action algorithm.

- **The presence of contact with household mold** . Certain difficulties in assessing the significance of household contact with mold often arise due to the fact that, for example, asthma with sensitization to fungi can debut years after the improvement of housing conditions. At the same time, patients themselves do not inform the doctor about contact with mold, and when collecting an anamnesis, they deny the fact of having a long-term contact with mold, since at the time of the appeal they already live in another residential area.

Microscopic fungi actively populate living quarters, human habitat. Long-term exposure to mold spores can lead to sensitization of the body, which affects the course of bronchopulmonary diseases [4]. Climatic conditions, geographical location have a significant impact on the composition and biochemical processes of micromycetes . Conidia of some fungi that enter the body through the respiratory tract provoke allergic reactions (Alternaria alternata , Mucor sp ., Penicillium sp ., Aspergillus sp .), mycoses` of internal organs (Aspergillus flavus , Aspergillus niger), mycotoxins to oses (Alternaria alternata , Aspergillus flavus , Aspergillus fumigatus) [5].

It should be noted that the growth and development of fungi in the room directly depend on the level of humidity and temperature. Fungi are found most frequently in leaks, in flower pots, in food storage areas, on moldy foods (bread, fruits, vegetables), on shower curtains, in old upholstery, in trash containers, on other organic substrates (e.g., wool). With pronounced humidity, there are more mushrooms in wooden houses than in concrete ones. Aspergillus mushrooms fumigatus are found even in pillows. Penicillium in the form of green mold can be found on the foundations of buildings. In addition, one important feature should be noted - the subjectivity of the patient's assessment of his apartment as "damp". Often, the analysis of such objective factors as "the presence of mold in the apartment" and "living on the first floor" will be much more informative than the subjective assessment of "damp apartment" [10].

Professional contact with mold. It can be noted that fungi are ubiquitous, they are widely used in the food industry, - animal husbandry, - poultry farming, - flour mills, wineries, - breweries - enterprises, industries - cheese, fodder yeast, enzyme



preparations, and is also often used by agricultural workers, foresters , gardeners and pharmacists. In most patients with allergic diseases with sensitization to fungi, attacks of suffocation or exacerbation of the disease occur when visiting damp rooms, basements, vegetable stores, archives, pools, autumn forests, and certain metro stations.

The presence of atopy. Atopy in the family or the presence of “atopic march”. in children and adults.

seasonality of the disease. There is a deterioration in the condition of patients with respiratory diseases, especially in the autumn-spring period (spore formation of fungi), as well as in those who are often ill and have a history of mycotic infection (candidiasis, detection of fungi in sputum cultures, nasal swabs, stool tests, onychomycosis , dermatophytosis and etc.).

Before the development of typical clinical manifestations of mycogenic BA, as a rule, patients have a history of frequent colds, rhinosinusitis , periodic "bronchitis", including obstructive ones . Patients who have lived in a room with mold or on the ground floor since childhood (or for quite a long time in childhood) often have diagnoses of “asthmatic bronchitis” or “bronchitis with an asthmatic component” in their children's outpatient records. In most patients, BA debuts as a clinical picture - recurrent obstructive bronchitis [10].

Psycho-emotional lability and susceptibility to stress. There is a pronounced decrease in the immune response during stresses of various origins, which contribute to an increase in the negative impact pathogenic microorganisms, including fungi.

Nutritional history. Violation of food storage and eating rules. Improper storage and violation of hygiene: the rules and conditions of transportation lead to the formation and increase various pathogenic fungi in foods, in particular *Aspergillus* fungi found in tea bags, black pepper powder, coffee, fruit confectionery. After - use by atopic - and sensitized patients, there is a worsening of the condition after. use in children of stale dairy products, moldy cheeses, spoiled fruits and vegetables, yeast-leavened bakery products basis, home canned products, and in adults - vegetables, jam, beer, champagne, kvass (i.e. fermentation products), yeast dough, the use of moldy products (old bread, etc.). In case of enteral intake of an allergen (when eating products, containing mold fungi and products based on yeast fermentation), symptoms of the gastrointestinal tract, skin and respiratory system. Upon contact of fungi with skin and mucous membranes membranes can develop urticaria, angioedema, atopic dermatitis and other skin manifestations [10].

Medical history. Young children, due to the anatomical and physiological characteristics of the body and, in particular, respiratory tract can be exposed to



respiratory diseases. Frequent, prolonged and uncontrolled use of antibiotic therapy and glucocorticoids can lead to complications such as impaired **intestinal** microbiota , which accompanies further in the form of difficulty breathing and typical attacks of bronchial asthma.

If a positive fungal history is detected, patients need to conduct a specific allergological examination. However, due to the objective difficulties in diagnosing this type of allergy (see above), mycoallergosis cannot be excluded in the case of negative allergic examination data with fungal allergens, but in the presence of clear clinical signs of fungal sensitization and constant or prolonged contact with fungi in the past or present. The study of specific immunoglobulins E to mold and yeast - fungi - is relevant, since allergic bronchopulmonary. diseases in children associated with fungal sensitization are characterized by a high frequency of complications, severe and chronic course, refractoriness , and ineffectiveness of conventional treatment regimens [10].

Successes of laboratory in vitro diagnostics using immunoblot : panels in our republic made it possible to identify causally significant fungal (*Cladosporium herbatum* , *Penicillium natanum* , *Candida albicans* , *Alternaria alternate* , *Aspergillus flavus* , *Aspergillus fumigatus* , *Aspergillus niger* , *Aspergillus versicolor* , *Mucor mucedo* , *Rhizopus nigricfns*) allergens on the basis of which traditional ideas about the role of Ig E-mediated reactions in bronchopulmonary diseases have expanded significantly. Designed tests for in vitro diagnostics of allergic bronchopulmonary diseases allow timely implementation of therapeutic measures in children, pregnant women, nursing mothers and patients of different ages.

Timely diagnosis and treatment of allergic bronchopulmonary pathology to environmental factors is an urgent problem in the work of pulmonologists, allergists, pediatricians, therapists and clinical immunologists. The urgency of the problem and the need to develop preventive, diagnostic and treatment programs aimed at preventing and reducing the prevalence of allergic bronchopulmonary pathology to environmental factors with fungal sensitization require a special approach.

Conclusion

With the help of a correctly collected anamnesis and timely diagnosis of sensitivity to fungi of the genus with sensitivity to fungi genus *Penicillium* and *Aspergillus*, doctors of various profiles will have the opportunity avoid eating the guilty allergenic foods that contribute to the appearance of clinical symptoms, as well as cross-over allergic reactions. Each patient is recommended an individual approach, since the guilty allergens in allergic reactions in them vary.

Recommendations. The algorithm of measures for fungal sensitivity in the



nutrition of patients is used to prevent unwanted allergic reactions. reactions.

Elimination diet for fungal allergy

In the presence of sensitization to fungi, in order to avoid allergic reactions should be excluded moldy nuts, fruits and vegetables, fermented foods.

Products	Allowed meals	Elimination Recommended
Soups	puree soup, decoctions from products included in the diet	Soups, with the addition of kefir, moldy cheeses
Foods high in protein	Lamb, beef, eggs, poultry meat, fish	High moisture foods, smoked fish, smoked meat, pickled foods
Potatoes and other side dishes	Rice, buckwheat, potatoes, pasta	
Bakery products	Yeast-free homemade cakes	Yeast dough, products that have undergone fermentation during preparation, baked goods rich in sugar

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