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The Origin of Allergic Diseases and Modern Clinical Diagnostic Methods

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Abstract: Allergy (from the ancient Greek ἄlós - "other, other, alien" and ἔrgón - "exposure") is a hypersensitivity of the body's immune system to an allergen with repeated exposure to an organism previously sensitized by the allergen. The term "allergy" was introduced in 1906 by the Viennese pediatrician Clemens von Pirquet. He noticed that the symptoms observed in some of his patients could be caused by environmental dust, pollen, or certain types of allergens. food. For a long time, it was believed that hypersensitivity develops due to a dysfunction of immunoglobulin E, but it soon became clear that several mechanisms involving various chemicals lead to the appearance of many of the symptoms previously classified as "allergy".

Key points: eye pain, swelling, runny nose, hives, sneezing, etc.

Introduction

PGH Gell and RRA Coombs identified 4 main types of hypersensitivity reactions. Today, 5 types of hypersensitivity reactions are known. The term allergy is reserved for the first type of reactions, characterized by classical IgE-mediated effects.

Etiology

This article mainly refers to immunoglobulin E (antibody E, IgE)-mediated hypersensitivity.

Allergies involve immune reactions (type I hypersensitivity reactions) in which the human body produces antibodies (immunoglobulins E) to specific proteins. When these substances cause the body to become hypersensitive, they are called allergens.

The first type of hypersensitivity is characterized by excessive activation of mast cells (mast cells) and basophils by immunoglobulin E (IgE), which turns into a generalized inflammatory reaction, which can cause various symptoms, such as runny nose, itching, and life-threatening - anaphylactic shock, Quincke's edema.

Allergy is a common disease. Many data indicate that there is a hereditary predisposition to allergies. Thus, parents suffering from allergies have a higher risk of having a child with the same pathology than healthy couples. However, there is no strict correspondence of hypersensitivity to certain allergens between parents and children.

Reasons for the increase in allergy incidence

There has been a significant increase in the incidence of allergies in recent decades. There are various theories explaining this phenomenon: one proposed by David P. Strachan in 1989

The hygiene hypothesis states that the transition to hygiene prevents the body from coming into contact with many antigens, which leads to a lower immune system load (especially in children).

Since our bodies are designed to constantly resist a certain level of threat, the immune system begins to react to harmless antigens.[1] The hygiene theory was developed to explain why children from large English families suffer less from allergies, such as allergic rhinitis or eczema, than children from single families. Epidemiological data support the hygiene effect theory. Studies show that various immunological and autoimmune diseases are much less common in third world countries than in developed countries, and that immigrants from developing countries suffer more from immune disorders the longer they have been in the country since they immigrated.[2] Longitudinal studies in developing countries show that immune disorders increase as wealth, and therefore cleanliness, increases.[3] Antibiotic use in the first year of life has been associated with asthma and other allergic reactions.[4] The use of antibacterial cleaning products, as well as cesarean section, have been associated with asthma in cause-and-effect relationships.

Increased consumption of chemical products. Many chemical products can also act as allergens and create prerequisites for the development of allergic reactions by disrupting the functioning of the nervous and endocrine systems.

However, despite numerous attempts to explain the sharp increase in allergic diseases by the influence of the man-made environment, no explanation has yet been given as to why the same factors have such an effect on some people and not on others. No connection between allergic diseases and general health has also been found.

Pathogenesis

All types of hypersensitivity are the result of a disruption in the body's immune response mechanism.

The pathogenesis of type I hypersensitivity reaction consists of an acute and a delayed phase of response. Consider the delayed phase of hypersensitivity.

Delayed hypersensitivity phase

After the inflammatory mediators have ceased to act, a delayed hypersensitivity reaction often develops. It is caused by the migration of various types of leukocytes to the site of inflammation: neutrophils, lymphocytes, eosinophils and macrophages, which gradually replace the damaged tissue with connective tissue. Typically, a delayed hypersensitivity reaction develops 4-6 hours after the initial reaction and can last 1-2 days.

The most common allergens

1 plant pollen. Viewed under an electron microscope. Plant pollen is one of the most common environmental allergens.

2 House dust mites. The chitinous shell of the mite is one of the main allergens in house dust

According to the genetic characteristics of the immune system, different people have different reactivity to different groups of allergens:

a. Dust and house dust mites
b. Foreign proteins in donor plasma and vaccines
c. pollen
d. molds

Medicines:

a. penicillins
b. sulfonamides
c. salicylates
d. local anesthetics

foods:

a. nuts
b. sesame
c. seafood
d. egg
e. legumes
f. milk
g. cereal plants
h. citrus fruits
i. Honey

Insect/arthropod bites:

a. bee venom

Animal products:

a. animal fur
b. cockroaches
c. house mite secretion

Others:

a. latex
b. nickel compounds
c. chemical cleaning products, washing powder, etc.

Allergy and dysbacteriosis

Today, it is clear that in some cases, allergic diseases in children are provoked by changes in the intestinal microflora, that is, dysbacteriosis. It is known that with dysbiosis, the integrity of the intestinal tissue barrier is disrupted, as a result of which undigested allergens (for example, protein fragments) enter the bloodstream. Dysbacteriosis in children can lead to atopic dermatitis, food allergies, eczema, and bronchial asthma.

Clinical manifestations

Allergy is characterized by a general or local inflammatory reaction to allergens. Local symptoms:

- Nose: swelling of the nasal mucosa (allergic rhinitis)
- Eyes: redness and pain in the conjunctiva (allergic conjunctivitis)
- Upper respiratory tract: bronchospasm, wheezing and shortness of breath, sometimes with true asthma attacks.
- Ears: feeling of fullness, possibly pain, and decreased hearing due to decreased drainage of the Eustachian tube.
- Skin: various rashes. Possible: eczema, urticaria and contact dermatitis. Typical places of localization of allergen penetration in the food direction: elbow folds (symmetrical), stomach, groin.
- Head: Occasional headaches occur with certain types of allergies.

A systemic allergic reaction, also called anaphylaxis, can cause skin reactions, bronchospasm, edema, hypotension, coma, and even death, depending on the severity.

- Hay fever and atopic dermatitis are examples of common mild allergic reactions. Many people suffer from these conditions. It occurs when a sensitive person comes into contact with pollen in the air. Asthmatics suffer from allergies caused by dust particles. In addition to environmental allergens, some medications can also cause allergic reactions.

Diagnostics

The simplest method for diagnosing and monitoring type I hypersensitivity is a skin test (also known as a prick test or prick test). A small amount of the suspected allergen or its extract (pollen, grass, nut extract, etc.) is injected intradermally (into the thickness of the skin) into specially designated areas on the inner surface of the forearm or on the back of the skin. with a felt-tip pen or pencil (ink or paint should be chosen carefully, as they can cause an allergic reaction). Allergens are introduced by intradermal injection or into small scratches made on the patient's skin with a sharp object. If the patient is sensitive to the test allergen, an inflammatory reaction develops within 30 minutes. This response can range from mild redness of the skin at the site of allergen injection to severe urticaria in sensitive patients.

Determination of total and specific IgE levels

Another method for diagnosing type I hypersensitivity is to measure the amount of allergen-specific IgE in the patient's serum using a colorimetric or radiometric immunoassay. The amount of specific IgE for a particular allergen can also be determined using a radioallergosorbent test (RAST). Like skin tests, the tests are performed on a limited list of allergens included in the test kits.

Treatment

Perhaps the most important point is the elimination of contact with allergens from the environment. Drug treatment for allergies is very limited. A long search for an effective method of treating allergies has led to tangible results. According to RN Khodanova, the method of treating allergies with autologous blood preparations has been patented. It must be admitted that modern medicine has not yet delved into the essence of allergies, the process of their emergence and development. Only in the studies of RN Khodanova. It has been shown that in allergies the ratio of helper lymphocytes and suppressor lymphocytes is disturbed.

Immunotherapy

Hyposensitization and desensitization are specific forms of immunotherapy, in which the patient is gradually vaccinated with increasing doses of a specific antigen. This can lead to both a decrease in severity and a complete elimination of hypersensitivity. The essence of the method is to stimulate the secretion of IgG ("blocking antibodies"), which bind the antigen that has entered the body before it reacts with IgE (which is secreted excessively in type I hypersensitivity), thereby preventing the development of an allergic reaction.

Another form of immunotherapy involves the intravenous administration of anti-IgE monoclonal antibodies, which bind free IgE and IgE on the surface of B lymphocytes, which means that IgE is destroyed. They do not bind to IgE fixed on the surface of basophils and mast cells through Fc receptors, otherwise they would lead to the development of an allergic reaction. The first agent in this group is omalizumab.

Such injections are given regularly and the dose is constantly increased. When undergoing immunotherapy for several months, you need to visit the doctor 2 times a week. The dose of the drug is increased each time until the exact dosage of the drug is determined. If the injections help, you need to visit the doctor every 2-4 weeks for several years. At this time, allergy symptoms weaken, become less frequent, and the allergy may disappear completely.

The most effective method of immunocorrection according to R.N. Khodanova (hemopuncture).

The method of immunocorrection with autologous blood preparation (hemopuncture) was developed in 1982 in the immunotherapy laboratory at the Institute of Immunology and patented in 1992 after clinical trials as a method of treating allergic diseases. The hemopuncture method can be

used as an independent treatment method or in the complex treatment of any form of allergy. At the same time, during hemopuncture treatment, foci of infection are disinfected. The hypersensitivity of the immune system to the allergen is suppressed within 1-3 days.

Injections of autologous blood products are given subcutaneously over several weeks until complete recovery.

The hemopuncture method has no contraindications in the treatment of allergies and can and should be used in cases of ineffectiveness of drug therapy, allergic reactions to treatment, infectious-allergic form of the disease, and most importantly, during periods of exacerbation of allergies.

Medicines

Some drugs have the ability to block the action of allergy mediators, preventing cell activation and degranulation. These include antihistamines, cortisone, epinephrine (adrenaline), theophylline and sodium cromoglycate. These drugs reduce the manifestation of allergy symptoms, but are not practically used for its long-term treatment. They can be used for emergency purposes for those suffering from anaphylaxis. Therefore, patients who are sensitive to insect bites, nuts, shellfish, etc. usually carry a syringe with a single dose of adrenaline.

A course of treatment for allergic diseases is sometimes carried out with small, increasing doses of histamine. It is believed that the body thereby acquires resistance to histamine, which reduces the susceptibility to allergic reactions. AD Ado (Histamine-dose immunotherapy) is also a method of individually selecting the dose of histamine based on the natural leukocyte emigration inhibition test available, isolated from donor blood by pharmaceutical organizations.

Alternative treatments for allergies

Since allergies are not short-term, but chronic, and their occurrence is not associated with infection, treatment methods should be sought in methods that can act on a long-term basis. Thus, changing a person's lifestyle, environment, and habits should be recognized as the most effective ways to treat allergies. Moreover, a person's lifestyle and habits are more important than environmental factors.

List of used literature:

1. Rustamovich, A. I., Negmatovich, T. K., & Fazliddinovich, S. D. (2022). БОЛАЛИКДАН БОШ МИЯ ФАЛАЖИ ФОНИДА РИНОСИНУСИТИ БОР БЕМОРЛАРДА БУРУН БЎШЛИҒИ МУКОЦИЛИАР ТРАНСПОРТИ НАЗОРАТИ ТЎҒРИСИДАГИ ЗАМОНАВИЙ ҚАРАШЛАР (адабиётлар шарҳи). JOURNAL OF BIOMEDICINE AND PRACTICE, 7(2).
2. Абдурахмонов, И. Р., & Шамсиев, Д. Ф. (2021). Эффективность применения местной антибиотикотерапии в лечении параназального синусита у детей с церебральным параличем. In НАУКА И ОБРАЗОВАНИЕ: СОХРАНЯЯ ПРОШЛОЕ, СОЗДАЁМ БУДУЩЕЕ (pp. 336-338).
3. Абдураҳмонов, И. Р., & Шамсиев, Д. Ф. (2021). Болаликдан бош мия фалажи билан болалардаги ўткир ва сурункали параназал синуситларни даволашда мукорегуляр дори воситасини самарадорлигини ўрганиш. T [a_XW [i [S US S_S^[ùe YfcS^, 58.
4. Siddikov, O., Daminova, L., Abdurakhmonov, I., Nuralieva, R., & Khaydarov, M. OPTIMIZATION OF THE USE OF ANTIBACTERIAL DRUGS DURING THE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE. Turkish Journal of Physiotherapy and Rehabilitation, 32, 2.
5. Тураев, Х. Н. (2021). Абдурахмонов Илхом Рустамович Влияние будесонида на качество жизни пациентов с бронхиальным обструктивным синдромом. Вопросы науки и образования, 7, 132.
6. Абдурахманов, И., Шамсиев, Д., & Олимжонова, Ф. (2021). Изучение эффективности мукорегулярных препаратов в лечении острого и хронического параназального синусита

при детском церебральном параличе. Журнал стоматологии и краниофациальных исследований, 2(2), 18-21.

7. Абдураҳмонов, И. Р., & Шамсиев, Д. Ф. (2023). БОШ МИЯ ФАЛАЖИ ФОНИДАГИ ПАРАНАЗАЛ СИНУСИТЛАРНИ ДАВОЛАШДА ЎЗИГА ХОС ЁНДАШИШ. MedUnion, 2(1), 14-26.
8. Орипов, Р. А., Абдурахмонов, И. Р., Ахмедов, Ш. К., & Тураев, Х. Н. (2021). ОСОБЕННОСТИ ПРИМЕНЕНИЕ АНТИОКСИДАНТНЫХ ПРЕПАРАТОВ В ЛЕЧЕНИИ НЕЙРОДЕРМИТА.
9. Ахмедов, Ш. К., Тураев, Х. Н., Абдурахмонов, И. Р., & Орипов, Р. А. (2021). НЕКОТОРЫЕ ОСОБЕННОСТИ ТАКТИКИ ПРОДУКТИВНОГО ЛЕЧЕНИЯ ХРОНИЧЕСКОЙ КРАПИВНИЦЫ.
10. Абдурахмонов, И. Р. (2021). Исследование мукоцилиарной транспортной функции слизистой оболочки полости носа у больных с параназальным синуситом на фоне детского церебрального паралича. In Актуальные аспекты медицинской деятельности (pp. 256-259).
11. Абдурахмонов, И. Р., & Тураев, Х. Н. (2022). ОПЫТ ПРИМЕНЕНИЯ СИНУПРЕТА С АНТИБАКТЕРИАЛЬНЫМИ ПРЕПАРАТАМИ В КОМПЛЕКСНОЙ ТЕРАПИИ РИНОСИНУСИТОВ У БОЛЬНЫХ ДЕТСКИМ ЦЕРЕБРАЛЬНЫМ ПАРАЛИЧОМ. Достижения науки и образования, (2 (82)), 88-92.
12. Abdurakhmanov, I., & Shernazarov, F. (2023). SPECIFIC ASPECTS OF TREATMENT OF CHRONIC RHINOSINUSITIS IN CHILDREN. Science and innovation, 2(D10), 164-168.