



Drug Allergy in Children: Causes, Symptoms, and Possible Treatments

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DESCRIPTION

Drug allergy is a type of hypersensitivity reaction that occurs when the immune system mistakenly identifies a drug as a harmful substance and produces antibodies against it. Drug allergy can cause various symptoms, ranging from mild skin rashes to life-threatening anaphylaxis. Drug allergy is more common with certain medications, such as penicillin's, cephalosporin, sulphonamides, and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).

The pathogenesis of drug allergy involves two main mechanisms: immunoglobulin E (IgE)-mediated and non-IgE-mediated reactions. IgE-mediated reactions occur when the drug binds to IgE antibodies on the surface of mast cells and basophils, triggering the release of histamine and other inflammatory mediators. These reactions usually happen within minutes to hours after drug exposure and cause symptoms such as urticarial, angioedema, bronchospasm, rhinitis, conjunctivitis, and anaphylaxis. Non-IgE-mediated reactions involve other types of immune cells, such as T cells, macrophages, and eosinophil's, and may take days to weeks to develop. These reactions cause symptoms such as serum sickness, drug-induced anaemia, Drug Rash with Eosinophilia and Systemic Symptoms (DRESS), and nephritis.

The diagnosis of drug allergy is based on the history of drug exposure, the clinical features of the reaction, and the results of skin tests or blood tests. Skin tests can detect IgE-mediated reactions to some drugs, such as penicillin's, by applying a small amount of the drug to the skin and observing for a wheal-and-flare response. Blood tests can measure the levels of specific IgE antibodies to some drugs or their metabolites in the serum. However, these tests are not available for all drugs and may have false-positive or false-negative results. Therefore, the diagnosis of drug allergy should be confirmed by a supervised oral challenge test with the suspected drug or a similar drug in a safe setting.

The treatment of drug allergy depends on the type and severity of the reaction. The first step is to stop the offending drug and avoid any cross-reactive drugs in the future. The second step is to

treat the symptoms with appropriate medications. For mild to moderate IgE-mediated reactions, antihistamines can reduce itching and swelling, while bronchodilators can relieve wheezing and shortness of breath. For severe IgE-mediated reactions or anaphylaxis, epinephrine injection is the first-line treatment, followed by corticosteroids, antihistamines, and fluids. For non-IgE-mediated reactions, corticosteroids can reduce inflammation and organ damage, while other drugs may be needed to treat specific conditions, such as immune suppressants for DRESS or erythropoietin for drug-induced anaemia.

The prevention of drug allergy involves identifying patients at risk and choosing alternative drugs whenever possible. Patients at risk include those with a personal or family history of drug allergy, atopy, asthma, or viral infections. Patients should also inform their health care providers about any previous drug reactions or allergies. Alternative drugs should be selected based on their chemical structure, efficacy, safety, and cost. For example, patients allergic to penicillin's may tolerate cephalosporin with different side chains or macrolides instead.

Drug allergy is a serious condition that can affect children's health and quality of life. It requires prompt recognition and management to prevent complications and mortality. It also requires careful avoidance of the culprit drug and its cross-reactive drugs in the future. By understanding the pathogenesis and treatment of drug allergy in children, health care providers can help them cope with this condition and improve their outcomes.

In conclusion, drug allergy is a common and potentially serious condition that affects children of all ages. It involves different immune mechanisms that cause various clinical manifestations. The diagnosis of drug allergy requires a careful history, physical examination, and laboratory tests, including skin tests, blood tests, and oral challenge tests. The treatment of drug allergy consists of discontinuing the offending drug, avoiding cross-reactive drugs, and managing the symptoms with appropriate medications. The prevention of drug allergy involves identifying patients at risk and selecting alternative drugs whenever possible. By following these principles, health care providers can help

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