

Investigation of drug and food allergies

/ Research purpose

Adverse drug reaction is a condition in which the body induces an excessive immune response to a drug. It is an acute disease that requires constant monitoring of the entire body, not just the skin, because it can cause damage to multiple organs, including the liver and kidney, and can be fatal in severe cases. Unlike other diseases, adverse drug reactions are initiated by medical intervention, thus making them a major social burden; therefore, its prevention and treatment is essential.

Food allergy, on the other hand, is an immediate allergic reaction to food antigens, with symptoms appearing on the skin in the form of itchy urticaria, as well as digestive and respiratory symptoms, and in severe cases, shock due to a rapid decrease in blood pressure. In recent years, it has become clear that people with certain patients with pollinosis are allergic to a relatively wide range of food antigens. Eating is not only an essential part of life, it is also an important part of a good social life. Food allergies limit the patient's dietary options and significantly reduce their quality of life. Therefore, it is necessary to overcome food allergies to ensure patient safety.

The aim of this study is to develop effective diagnostic and therapeutic methods by elucidating the pathogenesis of adverse drug reactions and food allergies.

/ Research overview

1. Pathophysiological analysis of drug-induced hypersensitivity syndrome

Toxic epidermal necrolysis (TEN), Stevens-Johnson syndrome (SJS), and drug-induced hypersensitivity syndrome (DIHS) are severe drug reactions. TEN/SJS is characterized by severe epidermal injury, whereas DIHS is characterized by various complications during the course of the disease. It has been shown that DIHS can be complicated by infections such as reactivation of herpesviruses in the early stages of the disease, and autoimmune diseases in the chronic stage of the disease. We aim to clarify the pathogenesis of DIHS in patients by following them closely over a long period of time to check for complications. By accumulating information through in-depth medical care, we hope to clarify the pathogenesis of severe drug reaction for the patients' benefit.

2. New causes of immediate allergy

Urticaria and anaphylaxis caused by food allergies is often diagnosed by detecting specific IgE in patient blood samples. At present, health insurance covers testing for numerous of allergens, but not all causes can be tested. In particular, allergies to fermented soybeans have been attracting attention in recent years, partly because fermented soybeans are representative of Japanese food culture. According to our clinical research, natto has been found to not only cause severe allergies, such as anaphylaxis, but also cause urticaria as a milder form of the allergy. In other words, it has become clear that natto, which it is unknowingly consumed, may be the cause of urticaria. By clarifying the causes allergies, we would like to increase the number of available specific IgE tests in the future for allergens that were previously unknown, such as natto.