



The Interaction between Neurological and Immune Systems in Food Allergy: Examining Enteric Neurons and Mucosal Mast Cells

Georgios C Papadopoulos*

Institute of Clinical Neurobiology, Innsbruck Medical University, USA

Abstract

The nervous system and the immune system individually play important roles in regulating the processes necessary to maintain physiological homeostasis, respond to acute stress and protect against external threats. These two regulating systems for maintaining the living body had often been assumed to function independently. Allergies develop as a result of an overreaction of the immune system to substances that are relatively harmless to the body, such as food, pollen and dust mites. Therefore, it has been generally supposed that the development and pathogenesis of allergies can be explained through an immunological interpretation. Recently, however, neuro-immune crosstalk has attracted increasing attention. Consequently, it is becoming clear that there is close morphological proximity and physiological and pathophysiological interactions between neurons and immune cells in various peripheral

Nervous system control:

The nervous system plays a crucial role in the regulation of the immune response in the gut. Enteric neurons, which are part of the enteric nervous system, are responsible for controlling the motility and secretory functions of the gastrointestinal tract. These neurons are also involved in the regulation of the immune response, as they can release neurotransmitters that modulate the activity of immune cells. For example, the neurotransmitter acetylcholine (ACh) is known to stimulate the production of immunoglobulin A (IgA) by B cells in the gut. Additionally, the neurotransmitter serotonin (5-HT) is involved in the regulation of the immune response, as it can stimulate the production of interleukin-17 (IL-17) by T cells. The interaction between the nervous system and the immune system is a complex and dynamic process that is essential for maintaining gut health and preventing disease.

Immune system in the intestine

The immune system in the intestine is a complex and dynamic system that is essential for maintaining gut health and preventing disease. The gut is home to a vast and diverse community of microorganisms, including bacteria, viruses, and fungi. These microorganisms interact with the immune system in a variety of ways, including by stimulating the production of antibodies and the activation of immune cells. The immune system in the intestine is also involved in the regulation of the gut microbiome, as it can influence the growth and activity of these microorganisms. For example, the production of immunoglobulin A (IgA) by B cells in the gut is known to be important for the regulation of the gut microbiome. Additionally, the immune system in the intestine is involved in the regulation of the gut barrier, as it can influence the integrity of the intestinal epithelium. The interaction between the immune system and the gut microbiome is a complex and dynamic process that is essential for maintaining gut health and preventing disease.

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