Infections and autoimmunity: a panorama.

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Abstract

For more than 2,000 years, it was thought that malignant spirits caused diseases. By the end of nineteenth century, these beliefs were displaced by more modern concepts of disease, namely, the formulation of the "germ theory," which asserted that bacteria or other microorganisms caused disease. With the emergence of chronic degenerative and autoimmune diseases in the last century, the causative role of microorganisms has been intensely debated; however, no clear explanatory models have been achieved. In this review, we examine the current available literature regarding the relationships between infections and 16 autoimmune diseases. We critically analyzed clinical, serological, and molecular associations, and reviewed experimental models of induction of and, alternatively, protection from autoimmune diseases by infection. After reviewing several studies and reports, a clinical and experimental pattern emerges: Chronic and multiple infections with viruses, such as Epstein-Barr virus and cytomegalovirus, and bacteria, such as H. pylori, may, in susceptible individuals, play a role in the evolvement of autoimmune diseases. As the vast majority of infections pertain to our resident microbiota and endogenous retroviruses and healthy carriage of infections is the rule, we propose to focus on understanding the mechanisms of this healthy carrier state and what changes its configurations to infectious syndromes, to the restoration of health, or to the sustaining of illness into a chronic state and/or autoimmune disease. It seems that in the development of this healthy carriage state, the infection or colonization in early stages of ontogenesis with key microorganisms, also called 'old friends' (lactobacilli, bifidobacteria among others), are important for the healthy living and for the protection from infectious and autoimmune syndromes.

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