

The mosaic of autoimmunity: Why we develop autoimmune diseases. The microbiome and metabolism

Yehuda Shoenfeld

*Zabludowicz Center for Autoimmune Diseases, Sheba Medical Center, Tel Aviv University, Israel
Past incumbent of the Laura Schwartz Kipp Chair for Research of Autoimmune Diseases. Sackler
Faculty of Medicine, Tel Aviv University, Israel
Corresponding author, email: shoenfel@post.tau.ac.il*

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Background: Autoimmune diseases are conditions in which the immune system damages normal components of the individual. Initially it was thought that autoimmune disease was the inevitable outcome of the presence of clones of lymphocytes with receptors that recognize self-antigens. Thus tolerance to self, the state of non-autoimmunity, was due to the absence of self-recognizing lymphocytes, the 'forbidden' culprits of autoimmune disease. Autoimmune diseases were found to be multifactorial in their etiology. For practical reasons these factors are classified into four categories:

Genetic, which entail the MHC class I, II, and III. A case in point will be the haplotypes of HLA-DRB1 which are prevalent in many classical diseases.

Immune deficiencies: C1q C2, C4 and IgA deficiencies are among the most common defects associated with diverse autoimmune conditions.

Hormonal state, most autoimmune diseases are detected in females at the child bearing ages. The role of estrogens will be delineated. In addition, other hormones play a role i.e. prolactin.

Environmental causes: Those are the most important as a trigger factors determining the time and type of disease. They entail infectious agents, chemicals, adjuvants, drugs and even vaccines. We will discuss smoking, different types of food (i.e. salt, coffee, chocolate, spicy food, etc.) and their effect on the microbiome.

The type of disease in an individual, in an autoimmune prone family, will be determined by the specific combination of the different factors mentioned above. A special emphasis will be put on the component of parasites.

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