Autoimmunity – when the immune system becomes its own worst enemy

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Autoimmune conditions mean that the immune system starts to attack the own body, which may result in tissue damage and necrosis. Examples of autoimmune diseases are type 1 Diabetes, Multiple Sclerosis, Systemic Lupus Erythematosus and Rheumatoid Arthritis. What causes the development of an autoimmune disease differs between diseases and is not completely understood for any of these autoimmune disorders. The one thing most researchers do agree on is that autoimmunity seems to be a result from genetic and environmental factors combined. Some of these environmental factors are said to be the amount of infection an individual is exposed to, the so-called hygiene hypothesis, where the connection between virus infections and autoimmunity can be derived.

What causes autoimmunity?

The causes of autoimmunity are widely discussed and researched but not yet revealed. There are a lot of different factors that may be involved in the development of these kinds of diseases. To explain autoimmunity there are speculations about several wrongly regulated mechanisms in the immune cells as well as environmental factors such as smoking and virus infections. There is also a genetic factor that should be considered, as some of the genes for autoimmune diseases seem to be genetically transferred.

The adaptive immune system

One part of the human immune system, called the adaptive immune system, is the one to blame when things are getting out of control resulting in autoimmunity. Why is that? It is because the adaptive system oversees the regulation of the immune system and the memory that remembers previous infections to be prepared if the same infection comes back again. If this system is malfunctioning, the rest of the immune system will also be out of balance and attacking the wrong cells. In case of autoimmunity these cells happen to be our own. When a gene is mutated to be wrongly activated or inhibited it makes it possible for the immune cells to attack the body's own tissue by getting the wrong signals.

The hygiene hypothesis and connection to virus infections

The hygiene hypothesis is connected to virus infections by saying that the less infections one person is exposed to during the childhood, the more likely it is to evolve allergies and autoimmune disorders. The reason behind this is that a special type of regulative T cells is depending on the amount of infections, the less infections the less training do these cells get. There has been much research about the virus connection between a special group of viruses and children with type 1 diabetes that imply that these viruses are capable of induce the disease.