Hashimoto's is an Autoimmune Disease, So What Is Going On With My Immune System?

Hashimoto's is the most common autoimmune disease in the United States, but very few doctors, alternative practitioners or patients understand what is happening to their immune system or what to do about it.

As a result, treatment largely ignores the autoimmune part of the disease. In this post, I break down the basics of the immune system and explain how it affects people with Hashimoto's and why it matters.

The Immune System Is Supposed to Protect Us

The immune system protects us from foreign invaders. Its like our body's military. It finds the bad guys (like bacteria, fungus, parasites and viruses) and it kills them. It also cleans things up by destroying our own dead and dying cells.

This is called cellular apoptosis, and if this process stops working, cancer develops. In addition, the immune system creates inflammation as part of the process of healing after an injury.

Recent research has shown that immune system has the ability to communicate with the nervous system, the endocrine system and digestive system and that it is actively modulating and influencing the body all the time.

The Immune System Has Different Parts

The immune system has many different parts, but the 2 important parts are called non-specific and specific immunity.

Non-Specific Immunty

The non-specific immune system is our immediate attack response. These are the front line soldiers that hang out in our borders (the mucous membranes of our lungs, digestive tract, skin and brain) and kill invaders.

This part of our immune system is called the T-Helper 1 (or TH-1) response. These are the macrophages (the Pac-man cells) and Killer T cells, the elite

squads that are pathogen killing machines.

TH-1 is also broken down into messenger proteins like Interleukin-12 (IL 12), Interleukin 2 (IL-2), Interferon Gamma (IFN) and Tumor Necrosis Factor (TNF). These are the bad ass Navy Seals that get the job done.

IL-12 is a commander and facilitator that is responsible for helping cytotoxic lymphocytes, natural killer cells mature and it also supplies growth factor to help CD4, CD 8 and Natural Killer cells become all that they can be. It is also involved in turning on genes that result in attacks on specific organs and has been implicated as an important player in Hashimoto's.

IL-2 is synthesized by CD 4 T cells, it increases antibody production, improves bone marrow responses to other immune cells and is used in the treatment of HIV.

A close relative of IL-2, IL-15, has been shown to be low in Hashimoto's and treatment with levothyroxine increases IL-15 levels, as do some Chinese herbs. Again, here is the contradictory nature of the immune system. Increasing IL-15, some theorize, may reduce the destruction of thyroid cells in Hashimoto's.

Interferon Gamma is another commander that fights viruses and prevents their RNA from communicating, it activates the packman cells to destroy organisms that get inside of cells and kills tumor cells.

Tumor Necrosis Factor (alpha) kills tumor cells, it turns on angiogenesis (the hallmark of malignant tumors), promotes fibroblasts and is involved in wound healing.

TNF (beta) is another commander who helps kill tumor cells, activates genes, and mediates CD8 T cells, NK cells, and helper-killer T cells to induce them to fatally injure their targets. A TNF receptor called CD95, which is responsible for cell death, has been found to be very high in patients with Hashimoto's.

Specific Immunity

The specific immune system produces antibodies that label the bad guys. This part of the immune system is like the C.I.A., it gathers intelligence on

the bad guys and it labels them with an antibody. Once a foreign invader has been labeled by an antibody, its much easier for the killer cells to destroy it. And like the C.I.A., it takes a while for them to gather the intelligence, so this process is usually delayed for a period of time.

This part of the immune system is called T-Helper 2 (or TH-2). These cells also do more than just labeling, they also attach themselves to certain cells like viruses to keep them from entering into our cells. This is important because once they are in our cells, they are much harder to kill and they can replicate more quickly.

TH-2 is also broken down into interleukins. IL-10 and IL-4 being 2 important ones.

IL-10 has been implicated in numerous autoimmune disease such as type I diabetes and multiple sclerosis. But it is a perfect example of the unpredictability of the immune system. It turns on some immune functions and shuts off others. It can block IL-1, IL-6 and TNF alpha, but turns on IL-2 and IL-4.

IL-4 is produced by CD 4 T cells and activates IgE, an immunoglobin important for creating immunity to parasites and involved in allergies.

Complicated, But Really Cool

To further complicate matters we have other parts of the immune system driving the immune attack and this is the family of interleukins that belong to IL-1. IL-1 is released by the pacman cells that are the front line attackers. IL-18 belongs in this family of cells and there is a lot of it in Hashimoto's patients, especially those with severe symptoms that don't respond to levothyroxine treatment. It may be responsible for severe inflammation.

Both parts of the immune system are needed for certain types of invaders. For example, viruses are often very small and can sneak past the border security. Then the TH-2 system uses it's cellular informants to sniff them out and it tags them. This can take several days to initiate and this is why it takes most people a few days to fight the common cold, which is caused by a virus.

In a general sense, the TH-1 system is considered inflammatory and the TH-

2 system is considered anti-inflammatory. But in reality, they are both involved in the process of inflammation. And IL-12 and IL-18 are important drivers of inflammation in Hashimoto's.

New Research Has Revealed Other Parts of The Immune System

Recent research has shown that there are other parts of the immune system that play important roles in this process. T-Helper 3 (TH-3) cells are the regulatory part of the immune system.

They help to orchestrate TH-1 and TH-2 cells and act as kind of cellular general to call off or calm the attack. T-Helper 17 (TH-17) cells are instigators and they rev up the attack and can make the damage and the carnage much more intense. A delicate balance of all parts of the immune system is important and with an autoimmune disease, like Hashimoto's, this balance is lost.

What Happens with Hashimoto's?

There are many possible reasons for the immune system to start labeling the thyroid as foreign tissue and create autoimmune thyroid conditions (including genetics, environment, endocrine imbalance, chemical exposure, responses to viruses and other antigens, stress responses and more). It is probably some combination of those many factors that lead to the loss of self tolerance and the immune system attacking the body's own tissue.

In most cases of Hashimoto's, some combination of the factors mentioned above lead to a slow, gradual attack against the thyroid. This eventually leads to the loss of enough thyroid cells that the condition presents as primary hypothyroidism and is seen on a blood test as high TSH.

TSH becomes high because, when the thyroid is not working properly, the pituitary gland increases production of TSH to increase thyroid gland activity. For most people with Hashimoto's, the thyroid never develops overactive symptoms. Over time, they develop symptoms of low thyroid function and get put on thyroid replacement hormone.

The issue of the autoimmune attack is never addressed. Instead, they are considered to be properly managed by having normalized TSH. In a sense, these patients are having their TSH managed, but they are not managing the

underlying problem. Over time, they lose more and more thyroid cells and they need more thyroid replacement hormone. The result, for many people, is that they continue to have all the hypothyroid symptoms (like fatigue, hair loss, depression, constipation, cold hands and feet, etc.) because the root cause has been largely ignored.

What Is Going On with the Immune System with Hashimoto's?

Since the thyroid is being destroyed, there is less thyroid hormone production. The immune system needs thyroid hormones to modulate TH-1 and TH-2 activity, so when this happens, the immune system can short circuit. This leads to a larger number of TH cells, and autoantibody producing B cells. These cells accumulate in the thyroid and kill thyroid cells.

There are many possible scenarios that can lead to this outcome. In his book, Why Do I Still Have Thyroid Symptoms? Dr. Datis Kharrazian cites some examples:

* The T suppressor cells that regulate the immune response could be too few in number, and like a weak general that has lost control of his troops, this can lead to unchecked attacks by the immune system. And tissue like the thyroid becomes a casualty.

* TH-1 has a number of different soldiers, known as interleukins. These all have specific jobs. For example, interleukin 2 (IL-2) is a messenger chemical that sends out orders for the killer cells to start killing. Some people make too much IL-2 and this creates a frenzy of destruction that can lead to the death of the thyroid cells. Chronic viral infections can cause too much IL-2 to be made and have been linked to the development of autoimmune thyroid disease.

* TH-2 also has lots of different soldiers. Interleukin 4 (IL-4) deploys B cells. Like some rouge C.I.A. agents, these cells can go crazy and tag the wrong proteins, and destruction of thyroid tissue is the result. Parasites and food allergies can cause too much IL-4 to be made.

* Too much sugar can cause the body to rapidly release insulin. These spikes in insulin can stimulate the production of too many B cells, they start tagging too many things, and this can lead to destruction of the thyroid.

And this is just the tip of the iceberg. In reality, there are many variables and many potential reasons for the immune system to short circuit. This is what makes treatment and management so challenging. And this is also why you must have a multi-pronged approach.

Which Parts of the Immune System are Out of Balance with Hashimoto's?

In most cases of Hashimoto's, researchers think TH-1 cells become overactive (but this is not true for everyone and is an oversimplification). It seems IL-18 and IL-12 also act together to throw a beating to the thyroid. Look for development of drugs that inhibit these 2 interleukins. In the meantime, stay tuned to learn about herbs and foods that can accomplish that naturally!

Hashimoto's people also often have a weak TH-3 regulatory system and their TH-2 may or may not be out of control. TH-17 is also often wound up, making the attack more intense. And none of this happens in a vacuum. This is all taking place in the context of the body where the immune system is interacting with the endocrine system, the digestive system and the nervous system. Further complicating the task of unwinding this mess. Its no wonder patients and doctors alike get frustrated and overwhelmed.

Your Hashimoto's Is Unlike Anyone Else's

The reality is that your Hashimoto's is not the same as anyone else's. You may have an overactive TH-1 system or you may not. You may also have a weak TH-2 system or you may not. TH-3 is probably weak and TH-17 is also probably revved up. And you may have leaky gut, and/or blood sugar issues, and/or adrenal fatigue, and/or anemia, and/or some active parasite or latent viral infection. It goes on and on.

You need an individualized approach that will create a unique action plan for your unique set of circumstances.

This is why I have created my six weak program: Healing Hashimoto's: The 5 Elements of Thyroid Health.

Managing this requires you to first identify what parts of your immune system are strong or weak. Then you must make sure you don't take

supplements or eat foods that further stimulate the overactive part and you must work to strengthen the weak parts. It is also important to strengthen the TH-3 regulatory system, especially.

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