Article 1 – Allergies, Part One.

Almost everyone will know of someone who has a problem with eating certain foods, reacts to certain chemicals or who gets hay fever at times during the year. Allergies may not necessarily result in runny eyes or sneezy noses for many people. They may instead suffer from tiredness, irritability, hyperactivity, poor concentration, asthma, eczema, hives, sinusitis, digestive upsets, bowel changes, low immunity, restlessness, or a general feeling of un-wellness. Ever wondered why?

To understand what an allergy is and what drives it, it is necessary to understand a little about the immune system and what keeps it in balance. The main focus of this month's column is to cover just that, but please bear in mind that the immune system is a vast topic and that I am covering only the most basic principles here.

Our immune system is made up of many different white blood cell types, proteins, organs and tissues, and these provide us with two types of immunity. One is established from birth (innate), and the other is built up over time (acquired). Acquired immunity occurs when the body is exposed to foreign substances (antigens) which cause it to protect itself by creating antibodies to them. Antibodies enable the body to remember what to do the next time it encounters the particular antigen again. Allergies are generally driven by the acquired immunity and tend to rear their heads in two ways - with an immediate response or a delayed response.

The classic allergy symptoms such as swollen runny eyes and nose, itching, inflamed eczema, breathing problems/asthma, hives, or in extreme cases, anaphylaxis are a result of an immediate allergy response. These symptoms result from the release of inflammatory chemicals, in particular histamine, into the blood stream and involve a type of antibody called IgE.

A delayed response usually involves IgG or IgM antibodies and is different from the first because there is a lag time of up to 48 hours between the allergen exposure and the development of symptoms. This is commonly referred to as a delayed-onset sensitivity reaction and relates almost solely to food or food additives. The symptoms are wider ranging and can be digestive, neurological, and respiratory or skin related. It is also possible for the cause of a delayed reaction to have an element of addictiveness to it – the culprits are often foods people "can't live without". This is because some of the chemicals produced such as histamine, serotonin and various prostaglandins can have a profound effect on the brain and can set up an addictive response in the body, inducing a cycle of cravings and withdrawals. To complicate things further, some foods contain naturally occurring chemicals such as salicylates, tyramine etc… which can induce allergy-like reactions in some people without necessarily involving an immune reaction. (In all of these, the fact that the reaction is delayed can make it very difficult to determine what the allergen or problem is, unless using a hair testing technique such as that available through the clinic. This is a far simpler way of establishing what the offender is than using the usual elimination diet).

Ultimately, the development of any type of allergy is an indication that the immune system has been knocked off balance for some reason, or that it has not been "trained" adequately as is often the case with childhood allergies.

So, what keeps the immune system on track? The most important mechanism which keeps the immune system in balance involves the bugs in our gut and a group of immune cells called T cells. There are a number of different types of T cell, and without getting too complicated, the biggies here are a type of T cell called T helper cells and another group called regulatory T cells.

T helper cells are the instructors for our immune system – they tell the rest of the immune system what it needs to fight and how. There are two kinds of T helper cell called Th1 cells and Th2 cells. Th1 cells instruct the immune system as to how to deal with any bacteria, viruses, fungi/yeasts and cancer cells, and Th2 cells tell it what to do about the allergens, chemicals or parasites that have been spotted. They do this by producing chemicals and proteins which act as communicators in the blood stream.
Regulatory T cells are the "brakes" for our immune system and tell it when to stop doing what it is doing. It is the interaction of these two types of T cell along with our gut flora which serves to keep our immune system behaving well.

The current understanding is that a normal immune system resembles a see-saw with the Th1 cells on one side and the Th2 cells on the other, tipping from side to side depending on the requirement but always coming back into neutral in between. The ability to come back to neutral is maintained by the regulatory T cells or the "brakes". These cells are mainly located in the lymph tissue which lines our intestines and interact with our gut flora which are an integral part of the control system for our immune system, teaching it what to react to and what is harmless. This ensures the right balance is maintained between the Th1 and Th2 cells. When allergies arise it is partly due to a break down in the feedback from the gut to the immune system, resulting in a loss of balance between the Th1 and Th2 cells and an over-sensitisation in the Th2 side of things. This is why it is so important to make sure any imbalance in the gut flora is corrected when addressing allergies.

Two things are considered to be a key cause to a loss of balance – a faulty feed back from the gut because of a bad gut environment as mentioned above, and repeated exposure to things which stimulate the production of IgE, IgG or IgM antibodies such as parasites (worms etc…), chemicals, food additives or certain food particles via a porous gut lining.

To make matters worse, the chemicals produced by Th2 cells when they communicate with the rest of the immune system can also suppress the production of Th 1 cells, which can lead to an even stronger Th2 dominance and a corresponding low immunity to bacteria, viruses, fungi and cancer cells.

To put it simply, the immune system can become "stuck" in the Th 2 mode, making it become more and more sensitive to the allergen, chemical, parasite side of things, and as a result the bacteria/virus/fungi/cancer cell-fighting arm often doesn't work so well. This is why low immunity often goes hand in hand with allergy or food intolerance problems.

The picture with childhood allergy still results from Th2 dominance, but the origin is a little different. When a woman becomes pregnant her immune system automatically shifts to being Th2 dominant to protect the growing foetus from attack by the Th1 side of things. As a result, children are born Th2 dominant. The child's immune system relies upon exposure to colostrum, bacteria in the birth canal, bacteria in food and in the environment to increase the levels of Th1 activity which then acts to bring the Th2 cell numbers into balance. The mother's immune system starts to self correct as soon as the child is born. Children with a proneness to allergy are generally those whose gut flora (and therefore immune regulation) has not been well established either through lack of breast feeding, a cesarean birth, antibiotic use without probiotic support, or lack of exposure to normal environmental microbes. Interestingly, because of the shift to Th2 dominance during pregnancy, it is not unusual for mothers who are prone to Th2 dominant conditions such as asthma or eczema to find these conditions get worse during pregnancy, and mothers with Th1 dominant auto-immune conditions

such as rheumatoid arthritis to find they improve while pregnant because the increase in Th2 serves to suppress their over-active Th1 response.

Obviously, this is a very simplified picture, but hopefully it will serve to give the general idea. In the next article, I will continue with what can be done to lower the risk of allergy and to improve symptoms.

If you would like further information please contact me at The Self Heal Clinic, Ph (06) 3048177.