



## **CHRONIC INFLAMMATION IN ASTHMA**

What is chronic inflammation and what does it mean? Let's begin with a look at the words themselves. Chronic, in relation to health, means an illness or disease that persists for a long time or one that is constantly recurring. Inflammation – think of “in-flames” – is the body's response to irritation, injury or infection that results in the damaged area becoming red, hot, swollen, and painful.

Think of a mosquito bite and its effect on the skin. The location of the bite becomes red, hot, swollen itchy and painful. That is inflammation.

For many years physicians, researchers and scientists looked for causes of disease and treated the signs and symptoms associated with the disease but did not place any emphasis on the underlying factors. For instance, a study in Saskatchewan found that individuals with asthma who used medication only to relieve asthma symptoms had a high death rate. That's when the search began for the underlying cause of asthma and what they found was inflammation.

Today we know that the symptoms associated with asthma are the tip of the iceberg, signalling a great deal of unseen inflammation in the airways. The symptoms include cough, wheeze, breathlessness, chest pain or chest tightness and fatigue. The fatigue comes from muscles that are working hard to breathe.

In asthma there is considerable difficulty in exhaling as inflammation causes the airways to narrow because of:

- the tightening of the muscles around the airway
- the production of excess mucus
- the swelling and damage to the lining of the airways

Inflammation not only causes the narrowing of the airways but when it is chronic, affects both the process of repair and this can result in reshaping or remodeling of the airways. Further more, cells that help fight inflammation do a lot of damage to the lining of the airways, exposing nerve endings and making the airways more sensitive or hyper responsive.

Most importantly, when there is inflammation in the lungs, the cells associated with inflammation do not stay only in the lungs. Because of the action of the heart that helps pump blood throughout the body, these cells are transported throughout the body and become 'systemic'. Now the inflammation is no longer localized. In other words, these inflammatory cells can be found everywhere throughout the body system.

When the inflammation is chronic, the result is a lack of healing. In asthma the airways may be constantly irritated and may not get a chance to heal. When an individual has a severe asthma attack or exacerbation, the lungs require at least three months to heal provided that nothing causes further irritation to the airways. Chronic inflammation will also lead to other diseases, including those of the gut.

Chronic inflammation is now seen as the underlying causes of many diseases from arthritis to depression to obesity, etcetera. In asthma, medical treatment targets the underlying inflammation with the use of controller medications. These are corticosteroids (similar to the hormones our body produces) and because they are inhaled, they go directly into the lungs and a very, very small quantity (measured in micrograms which are one-thousandth of a milligram) are used. The inflammation has to be treated as well as the symptoms. Symptoms of asthma show that the inflammation in the airways is increasing and are generally treated with reliever medications – so called because all these medications do is relieve symptoms but they do not have any effect on the inflammation.

In asthma it is particularly important to treat and decrease the chronic inflammation. Without breath there is no life.