



## EFFECT OF ANTI-INFLAMMATORY MEDICATION ON ASTHMA

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Asthma as a chronic inflammatory disease is now well established. Patients with asthma are known to demonstrate the presence of increased numbers of cells which produce *inflammatory mediators* (chemicals), increased numbers of *mucous* producing cells, and an increase in the number and size of the individual *muscle cells*. These changes as seen under the microscope are responsible for producing the symptoms of asthma. Over time the inflammation produced by these cells may also cause permanent damage to the lining of the airways, a concept termed *airway remodeling*. Chronic illnesses such as hypertension and diabetes are well known to produce long term complications if not treated appropriately so it should come as no surprise that asthma can too. In hypertension, for example, the heart is forced to work against high resistance and pressure, which over time can cause the heart to fail.

In the lungs of the patient with asthma excess amounts of mucous, inflamed airways, and spasms of muscle can also turn the act of breathing into a high pressure/high resistance system. If asthma is treated appropriately, we ought to be able to minimize damage to the airways. Unfortunately, many people with asthma are either under treated and/or have disease, which is severe, and the chronic inflammatory reaction in their airways is not well controlled. This results in poorly controlled disease with the patient experiencing frequent symptoms requiring use of *rescue* medications. These rescue medications, e.g. Albuterol, have no anti-inflammatory properties and over reliance on this class of medication may eventually lead to airway remodeling.

The decision you and your doctor must make is whether your asthma is of sufficient severity to warrant daily anti-inflammatory or *preventative* therapy. If your doctor determines that your asthma is mild then a rescue medication is all that you will need. Disease of moderate severity will require more intensive treatment with an anti-inflammatory or preventative medication. How does your doctor decide when you have crossed the threshold from mild to moderate disease? A doctor will look at several criteria. The one, which is perhaps the easiest to remember is that if you require use of your rescue inhaler for daytime symptoms more than **twice a week**, or awaken from sleep with asthma symptoms more than **twice a month** then it is likely you would benefit from daily preventative medication. This may seem excessive but studies in both children and adults have demonstrated the presence of airway inflammation when looked at under the microscope in patients with mild asthma who were having no symptoms. Another feature seen is a thick band of scar tissue, which forms immediately beneath the surface of the airway. This area is thickened in even mild asthma and progressively widens with increasing severity of disease. One class of anti-inflammatory therapy, inhaled steroids, has been shown to partially reverse these changes over time and may prevent at least some of the long-term complications in asthma. Additionally, this class of drug if initiated soon after the diagnosis of asthma is made, will result in more significant improvement in lung function than if treatment is delayed.

The focus when treating asthma has shifted from simply treating symptoms to one in which prevention of symptoms is paramount. It is hoped that by treating early and aggressively we can also preserve normal lung function as well. The topic of airway remodeling is an active area of research and will likely be very helpful in our understanding of the natural history of asthma.