



## Pathophysiology and Pathogenesis of Asthma

Ralph Stadhouders\*

Department of Respiratory Medicine, Children's Hospital of Soochow University, Suzhou, China

### DESCRIPTION

A common pulmonary disorder called asthma is characterized by periods of bronchoconstriction, tightness of the smooth muscle in the lungs, and chronic inflammation of the respiratory tubes.

Asthma can be classified as either allergic or non-allergic. Allergy-induced asthma will be the subject of this article. Bronchoconstriction is noticeable in both cases.

#### Bronchoconstriction

Inflamed airways respond to environmental triggers like smoke, dust, or pollen during an asthma attack. Breathing becomes challenging because the airways are constricted and overflowing with mucus. In its most basic form, asthma is brought on by an immunological reaction in the bronchial airways.

Patients with asthma have "hypersensitive" airways to some triggers, often known as stimuli. In reaction to exposure to certain triggers, the bronchi (large airways) tighten into spasm (an "asthma attack"). Soon after, there is inflammation, which causes the airways to become even more constricted and produce excessive amount of mucus, which causes coughing and other breathing problems.

Bronchospasm can go away on its own in 1-2 hours or, in around 50% of participants, it can become a component

### ARTICLE HISTORY

Received: 28-Dec-2022, Manuscript No. JMOLPAT-23-88626;  
Editor assigned: 02-Jan-2023, PreQC No. JMOLPAT-23-88626 (PQ);  
Reviewed: 17-Jan-2023, QC No JMOLPAT-23-88626; Revised:  
24-Jan-2023, Manuscript No. JMOLPAT-23-88626 (R); Published:  
31-Jan-2023

of a "late" reaction, in which the initial insult is followed 3–12 hours later by more bronchoconstriction and inflammation. The autonomic nervous system, which both functions reflexively, maintains the bronchus' natural caliber by maintaining its proper balance. The afferent nerve terminals that make up the parasympathetic reflex loop start off under the bronchus' inner lining.

When these afferent nerve terminals are triggered, impulses move to the brain-stem vagal center and then via the vagal efferent pathway until they once more reach the bronchial small airways. From the efferent nerve terminals, acetylcholine is released. This acetylcholine causes a surplus of inositol 1, 4, 5-trisphosphate (IP3) to develop in the smooth muscle cells of the bronchi, which causes the muscles to shorten and start the bronchoconstriction process.

#### Exposure to air pollution and asthma during pregnancy

Out of every 100 pregnant women, four to eight have asthma. This is as a result of an immune shift brought on by hormonal changes during pregnancy. The activity of natural killer cells, Th1 cell production of inflammatory cytokines, and production of anti-inflammatory cytokines can all be decreased in specific circumstances due to an increase in estrogen levels. These are significant contributors to the pathophysiology of asthma, as we've shown.