Joual of Molecular Pathophysiology, 2022
VOL 11, NO. 6, PAGE 01

COMMENTARY

Open Access

Maternal Asthma: Exposure to Air Pollution during Pregnancy

James Lee*
Department of Neurosurgery, Morehouse School of Medicine, Atlanta, USA

ARTICLE HISTORY
Received: 16-May-2022, Manuscript No. JMOLPAT-22-67496; Editor assigned: 19-May-2022, PreQC No: JMOLPAT-22-67496 (PQ); Reviewed: 02-Jun-2022, QC No: JMOLPAT-22-67496; Revised: 08-Jun-2022, Manuscript No: JMOLPAT-22-67496 (R). Published: 15-Jun-2022

Description

A common lung disorder known as asthma is characterized by episodes of bronchoconstriction, tightening of the respiratory smooth muscle, and chronic inflammation of the respiratory tubes. According to the Centers for Disease Control and Prevention, asthma affects 1 in 11 children and 1 in 12 adults in the US. Asthma affects 235 million people globally, according to the World Health Organization. Asthma can be divided into two main categories: allergic and non-allergic. This article will concentrate on allergic asthma. Bronchoconstriction is noticeable in both situations.

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. Hypersensitivity of type I is often how it is categorised. The bronchi spasm when exposed to these stimuli, causing them to contract. Soon after, there is inflammation, which causes the airways to become even more constricted and produce an excessive amount of mucus, which causes coughing and other breathing problems. In around 50% of participants, bronchospasm may become a component of a "late" reaction, in which the initial insult is followed 3–12 hours later by further bronchoconstriction and inflammation. Bronchospasm may recover spontaneously in 1-2 hours.

The autonomic nervous system, which both functions reflexively, maintains the bronchus' natural size through balanced operation. Afferent nerve terminals that come from the bronchus' inner lining make up the parasympathetic reflex loop. When these afferent nerve terminals are triggered, impulses move from there to the brainstem's vagal centre and then through the vagal efferent pathway to the bronchial small airways once more. The efferent nerve terminals release acetylcholine. This acetylcholine causes bronchial smooth muscle cells to produce excessive amounts of Inositol 1,4,5-trisphosphate (IP3), which causes the muscles to shorten and start the bronchoconstriction process.

Asthma and exposure to air pollution during pregnancy

Four to eight pregnant women out of a hundred have asthma. This is a result of the immunological shift that occurs during pregnancy as a result of hormonal changes. When oestrogen levels raise, natural killer cell activity, Th1 cell production of inflammatory cytokines, and production of anti-inflammatory cytokines are all decreased. These are crucial in the pathophysiology of asthma, as we've shown.

Researchers discovered a connection between asthmatic pregnant women's premature births and exposure to air pollution. According to the findings, premature birth is more likely in women who have asthma. Researchers hypothesised that persistent exposure to air pollutants including carbon monoxide and nitrogen dioxide was linked to asthmatic episodes in pregnant women.

Researchers also looked at the peak asthma risk period for women. According to data, women who were exposed to pollutants both before and during pregnancy had a higher risk of having asthma. For example, "an increase of 30 ppb in nitrogen oxide exposure in the three months before to pregnancy increased preterm birth risk by approximately 30% for women with asthma, compared to 8% for women without asthma."

Contact: Lee J, E-mail: leejames123@gmail.com