

# The Hidden Links that Clog Lungs and Airway with Fat

Neenu Rachel Santhosh<sup>1</sup>, Sreelakshmi Padmakumar<sup>2</sup>, Arathi T.V<sup>3</sup>

<sup>1,2,3</sup>Department of Pharmacy Practice, National College of Pharmacy, Kerala, India

**Abstract:** We are already known of how fat build ups in the arteries and their role in developing heart problems, but now for the first time, new studies shows that clogging of fat could happen in the airway walls of the lungs particularly in people who are overweight or obese. The link between obesity and asthma has been already known for years, but the cause behind the link was not completely clear. Before it was thought the direct pressure on the lungs or additional inflammation due to obesity contributes to asthma. Recently it's found that fatty airways also play a part, too. Excess fat accumulation in the airway alters its normal structure and prompt inflammation in the lungs. The lungs also have a subpopulation of cells that form fat. To keep the airways properly lubricated during breathing, a fatty secretion is expelled into the inner lining by surfactant producing cells. Accumulation of fat in the lungs mimics the process that make fat to build up and damage the liver of alcoholics. In this article, I review how fatty airway is correlated with the body weight of individuals, why overweight increases the chances of developing asthma? And whether respiratory disease can be reversed by weight loss therapy?

**Keywords:** Fatty airway, Obese, Asthma

## 1. Introduction

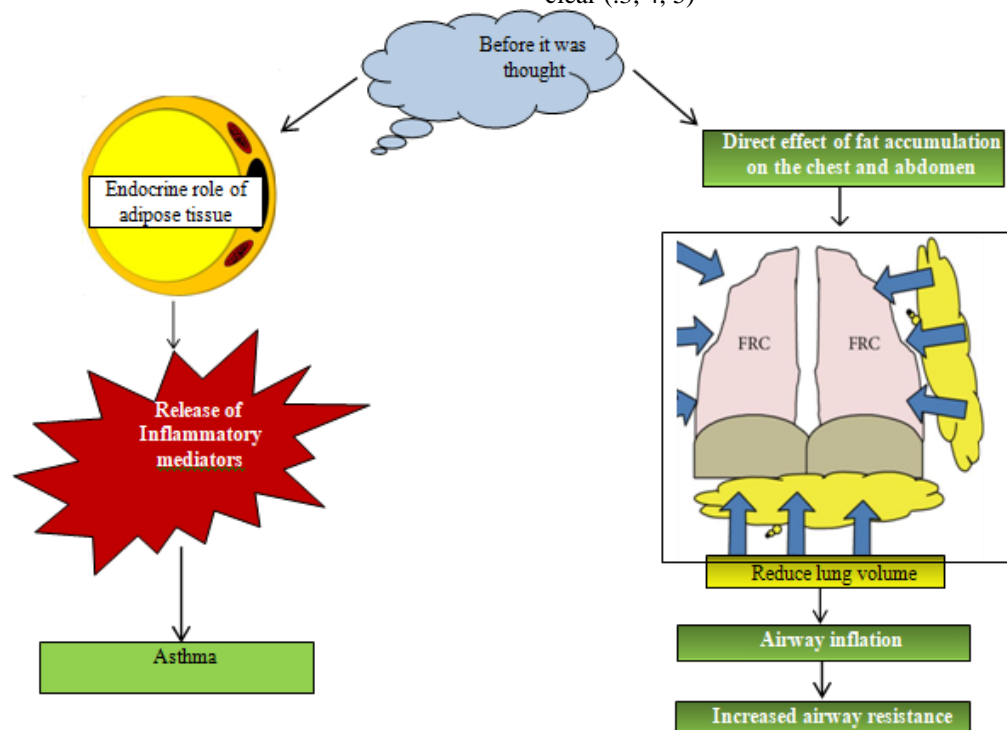
Obesity is recognized as an emerging world-wide health concern (1). It is anticipated that by 2025 global obesity prevalence will become 18% in men and 21% in women (2). The link between obesity and various diseases is well known, but for the first time, new studies shows that clogging of fat could happen in the airway walls of the lungs particularly in people who are overweight or obese (3). Epidemiological data have shown a positive association between adiposity and abnormal respiratory function, particularly asthma (4). In the United States the majority of patients with severe asthma are obese and they experience more symptoms compared with non- obese asthma patients (5). In this article, I review mysterious link between body weight and respiratory diseases.

## Fatty Lung Disease

All of us are familiar with fatty liver disease, which is so common today. But fatty lung disease is a totally new topic. A study at the Thomas Jefferson University says that fat also collects in the lungs mainly in obese people. In this study, researchers examined post-mortem samples of the lungs of 52 people-15 (without asthma) and 21 (with asthma). They identified and quantified any fatty tissue present. The study concluded that fat accumulates in the walls of the airways and the amount of fat present increases in line with increasing BMI (3).

## 2. Can Fat Cause Asthma?

The link between obesity and asthma has been known for years, but the cause (s) behind the link was not completely clear (.3, 4, 5)

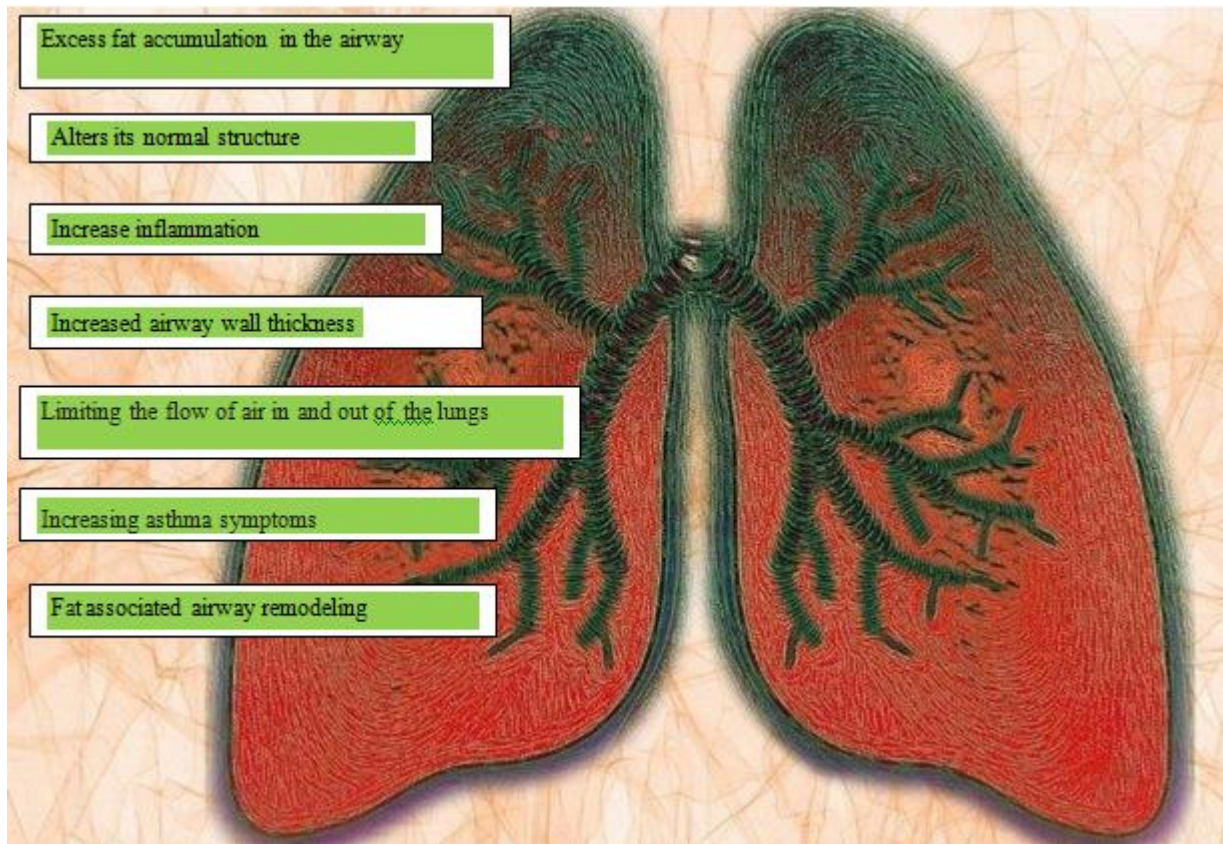


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Recently it's found that fatty airways also play a part, too (3, 7).



### Fat Accumulation in Lungs Immune Cells

Accumulation of fat in the lungs mimics the process that make fat to build up and damage the liver of alcoholics. In alcoholic people, liver cells produce fat as a defense mechanism against the harmful effects of the alcohol. This fat builds up over time and leads to fatty liver disease, which in turn cause liver failure (3, 8, 9, 10).

The lungs also have a sub-population of cells that form fat. To keep the airways properly lubricated during breathing, a fatty secretion is expelled into the inner lining of the lungs by surfactant producing cells (3).

After being exposed to alcohol, surfactant cells seem to increase their production of triglycerides by 100 per cent and free fatty acids by 300 per cent. This fat accumulation is seen also in lung macrophages-immune cells that normally destroy the bacteria or sick cells in the lung (13).

Researchers say that in order to protect the cells in the lungs, the macrophages try to engulf the excess fat. But, in the process, they become less protective against infections and disease (3).

### Risks of fat in the lungs

Fatty airways increase the risk of several health disorders other than pneumonia and acute respiratory distress syndrome.

### Fatty airways Can Cause Lipoid Pneumonia

Fatty lung disease or Fatty airways can lead to pneumonia and life-threatening acute respiratory distress syndrome in alcoholics with a weak immune system (3). Also inhalation through the nose or aspiration while eating can also form fat in the lungs. Here, fat particles from outside get in the body which lead to exogenous lipoid pneumonia. Also, fatty deposits in the lungs over time and causes endogenous lipoid pneumonia (11)

### Fatty airways Can Cause Fibrotic Lung Damage

Fat accumulations in the lungs over time make it hard and form fibroids, which in turn cause pulmonary fibrosis. There is no cure for pulmonary fibrosis and management is mainly given to decrease the severity of symptoms (12).

### Fatty airways can increase the risk of asthma

Obesity can cause fat accumulation in the airway altering its normal structure. This can limit airflow by blocking the airways due to increased airway thickness making it difficult for a person to breathe normally. Thus increases the risk of asthma. (3, 5, 14, 15)

### Can Weight Loss Therapy Reverse Respiratory Diseases?

Studies on the effects of weight loss in asthmatic patients are scarce (16). A prospective, randomized trial was conducted in obese patients with severe uncontrolled asthma, which aims to

confirm the impact of weight reduction program in severe asthmatic patients associated with obesity (17). This study says that weight loss showed significant improvement in asthma control (18). The mechanism involved was not related to airway inflammation or bronchial reactivity, but by an increase in forced vital capacity. So this trial suggests that weight loss has an important role in the management of obese asthmatic patients (19, 20).

### 3. Conclusion

It's very urgent to understand why asthma remains a major health issue and identify new tactics to improve asthma management.

WHAT CAN WE DO?

Although some factors may be beyond our control, there are a few things that we can do to decrease the risk due to fatty lungs. Drink in moderation and maintain healthy weight. Eat well-balanced meals and include a lot of colorful fruits and veggies to diet. Exercise regularly and maintain a healthy lifestyle.

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