

Cigarette smoke and emphysema: How smoking damages your lungs.

Ok Oh*

Department of Pulmonary and Critical Care Medicine, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, 44033, Republic of Korea

Introduction

Emphysema is a serious and debilitating disease that can have a significant impact on a person's quality of life. It is a form of Chronic Obstructive Pulmonary Disease (COPD) that is characterized by the progressive destruction of the alveoli, or air sacs, in the lungs. This results in a reduction in the surface area available for gas exchange, making it increasingly difficult for individuals with emphysema to breathe. While there are several factors that can contribute to the development of emphysema, cigarette smoking is by far the most common cause.

The impact of cigarette smoke on the lungs

Cigarette smoke contains a complex mixture of chemicals, many of which are known to be toxic and carcinogenic. When these chemicals are inhaled, they can cause significant damage to the lungs, including the development of emphysema. One of the most harmful components of cigarette smoke is a group of chemicals called Reactive Oxygen Species (ROS). These chemicals are highly reactive and can cause damage to cells by disrupting their normal metabolic processes.

In addition to ROS, cigarette smoke also contains a variety of other harmful chemicals, including tar, carbon monoxide, and nicotine. Tar is a sticky substance that can accumulate in the airways and alveoli, making it more difficult for air to flow through the lungs. Carbon monoxide is a gas that can bind to hemoglobin in the blood, reducing its ability to transport oxygen to the body's tissues. Nicotine is a highly addictive substance that can cause constriction of the airways, making it harder to breathe.

The development of emphysema

The damage caused by cigarette smoke can lead to the development of emphysema through several different mechanisms. First, the chronic inflammation caused by cigarette smoke can lead to the destruction of the alveoli, reducing the surface area available for gas exchange. Over time, this damage can become irreversible, leading to the development of emphysema. Second, cigarette smoke can interfere with the production of an enzyme called alpha-1 antitrypsin, which helps to protect the lungs from damage. When this enzyme is not functioning properly, the lungs are more susceptible to damage from cigarette smoke. Finally, cigarette smoke can cause oxidative stress in the lungs, which can lead to the release of enzymes that break down the alveolar walls.

Treatment and prevention

While there is no cure for emphysema, there are several treatments available that can help to manage the symptoms and slow the progression of the disease. These include medications, oxygen therapy, pulmonary rehabilitation, and surgery in some cases. The most effective way to prevent emphysema, however, is to avoid smoking altogether. Quitting smoking can help to reduce the risk of developing emphysema, and can also help to slow the progression of the disease in individuals who already have it [5].

Conclusion

Cigarette smoking is the most common cause of emphysema, and the chemicals in cigarette smoke can cause significant damage to the lungs, leading to the development of this chronic and debilitating disease. The impact of cigarette smoke on the lungs can interfere with normal metabolic processes, reduce the surface area available for gas exchange, and cause oxidative stress, among other effects. While there are treatments available to manage the symptoms of emphysema, the most effective way to prevent the disease is to avoid smoking altogether. It is essential to educate individuals about the risks associated with cigarette smoking and to promote smoking cessation as a means of reducing the incidence and severity of emphysema and other smoking-related diseases.

References

1. Lefrak, MD SS, Yusen, et al. Recent advances in surgery for emphysema. *Annu Rev Med.* 1997;48(1):387-98.
2. Ramsey SD, Berry K, Etzioni R, et al. Cost effectiveness of lung-volume-reduction surgery for patients with severe emphysema. *N Engl J Med.* 2003; 348(21): 2092- 2102.
3. National Emphysema Treatment Trial Research Group. Patients at high risk of death after lung-volume-reduction surgery. *N Engl J Med.* 2001;345(15):1075-83.
4. Tassi GF, Davies RJ, Noppen M. Advanced techniques in medical thoracoscopy. *Eur Clin Respir.* 2006;28(5):1051-9.
5. Kemp SV, Slebos DJ, Kirk A, et al. A multicenter randomized controlled trial of Zephyr endobronchial valve treatment in heterogeneous emphysema (TRANSFORM). *Am J Respir Crit Care Med.* 2017;196(12):1535-43.

*Correspondence to: Ok Oh, Department of Pulmonary and Critical Care Medicine, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, 44033, Republic of Korea, E-mail: okoh@docra.kr

Received: 05-Mar-2023, Manuscript No. AAJCRM-23-99110; Editor assigned: 07-Mar-2023, PreQC No. AAJCRM-23-99110(PQ); Reviewed: 21-Mar-2023, QC No. AAJCRM-23-99110; Revised: 24-Mar-2023, Manuscript No. AAJCRM-23-99110(R); Published: 28-Mar-2023, DOI: 10.35841/aaajcrm-7.2.144