World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-19, February 2023
ISSN: 2749-3644

MORPHOFUNCTIONAL APPEARANCE OF RESPIRATORY ORGANS IN DIABETES MELLITUS

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Article history:

Received: December 8th 2022
Accepted: January 8th 2023
Published: February 10th 2023

Abstract:

Diabetes mellitus, commonly known as diabetes, is a lifelong metabolic disorder that affects millions of people around the world. It is one of the leading causes of disability and death, and yet, many people are not even aware of what exactly it is or how it can be managed. There are given main information about morpho functional appearance of respiratory organs in diabetes mellitus in this article.

Keywords: diabetes mellitus, functional appearance, diabetes, chronic metabolic, physiological parameters.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by an excessive accumulation of glucose in the bloodstream due to a partial or complete failure of the pancreatic hormone insulin. In general, the morbidity and mortality associated with diabetes mellitus increase with age, sex and genetic predisposition. As such, it is learn to observe that normal physiological parameters of the respiratory system are altered in diabetic patients. Consequently, morphofunctional appearance of the respiratory organs has been an area of interest and research in diabetes mellitus.

MAIN BODY. The morphofunctional alterations of the respiratory system in patients with diabetes mellitus are mainly related to the alterations caused by the disease process itself and by treatment-induced side effects. In terms of the former, the progression of diabetes mellitus can lead to structural abnormalities to the respiratory system, and such effect is further enhanced by the presence of diabetic neuropathy, which can manifest in a number of different respiratory problems, such as recurrent infections and even respiratory failure. On the other hand, diabetics are also at an increased risk for developing congestive heart failure due to the damage diabetes mellitus inflicts upon the heart muscle and its associated respiratory response. In addition, patients with diabetes mellitus may also experience difficulties breathing as a result of secondary conditions, such as obstructive sleep apnea, interstitial lung disease, and pulmonary hypertension.

In terms of the treatment-induced side effects of diabetes mellitus, steroids and insulin therapy can often result in increased airway reactivity and bronchial hyperresponsiveness. Consequently, this increases the likelihood of asthma, coughing, and wheezing onset in patients with diabetes mellitus. Further, some studies have also implicated the use of certain medications in causing diabetics to experience difficulties breathing, such as certain thiazolidinedione (TZD) medications – a drug class used to treat type 2 diabetes mellitus. Morphological Changes of the Respiratory System in Diabetes Mellitus. Diabetic patients typically display several morphological changes in their respiratory tissues, which are caused primarily by the excessive deposition of glycoproteins and glycosaminoglycans (GAGs) within the alveolar wall. As a result, the alveolar sacs become filled with thick mucous, which causes them to swell and further obstructs the airflow. In addition, the diabetes-induced formation of extra cellular matrix molecules can also lead to rupture of the alveolar walls, resulting in the formation of cysts and abscesses. These structural changes not only make breathing difficult for diabetes patients but also increase their vulnerability for pneumonia and other respiratory infections.

Diabetes is a condition that impairs the body's ability to effectively use and store glucose, which can lead to very serious health issues if left untreated. Fortunately, with proper management and treatment,

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people with diabetes can enjoy a normal, active, and productive life.

What is Diabetes Mellitus? Diabetes mellitus (DM) is a chronic health condition in which the body's ability to produce or respond to the hormone insulin is impaired, which results in elevated levels of glucose in the blood. People with DM are unable to effectively use and store glucose, leading to long-term health issues. Therefore, it is important to understand the symptoms and early warning signs of diabetes in order to get timely medical help and prevent complications

Types of Diabetes

There are two main types of diabetes: type 1 diabetes, which occurs when the body does not produce any insulin, and type 2, which occurs when the body does not use insulin in the correct way. Type 1 diabetes, also known as juvenile diabetes, usually occurs in young children and adults, and is usually diagnosed in children or young adults before the age of 30; type 2 diabetes is typically diagnosed later in life and is more common in adults over the age of 45. The symptoms of diabetes can vary depending on the type, as well as other factors, but some common signs of diabetes include increased urination and/or thirst, weight loss, fatigue, blurred vision, and slow wound healing. If any of these symptoms is present, it is important to seek medical consultation right away. A doctor will typically diagnose diabetes through physical examination and lab tests. Blood tests are used to measure glucose levels and to determine how well the body is producing and using insulin. Other tests may be used to detect any complications of diabetes or to see if treatment is working properly. Once diagnosed with diabetes, people should take an active role in their own health and wellbeing. Eating a healthy diet and regular exercise will help keep blood sugar levels stable and reduce the risk of health complications. Additionally, it is important to take any diabetes medications prescribed by the doctor. People with diabetes should also have regular health screenings, such as eye and foot examinations, to detect any complications from the condition. Finally, education is key to the successful management of diabetes. People with diabetes should understand their condition and learn all they can about its causes, preventative measures, and treatment options. Additionally, staying in contact with a doctor and other healthcare professionals can help people with diabetes stay on track with their treatment plan. With proper management and lifestyle changes, people with diabetes can live a long, active life.

In terms of airway selection, diabetes mellitus has been associated with the narrowing of the bronchi and bronchioles, as well as an increased tortuosity of airway epithelial cells. In other words, the cells lining the respiratory systems of diabetics are more branched and twisted than that of healthy individuals, further complicating their airflow and ventilation. Further, a thickening of the bronchial smooth muscles have been observed in diabetes patients, and this has been linked to the well-known side effect of steroid and insulin therapies. Moreover, diabetes mellitus has also been connected to an increased deposition of mucopolysaccharides, which can increase the inflammation of the respiratory system and also further impede the airflow.

Lung Capacities of Diabetics. Diabetics typically have a lower ventilation capacity as a result of the obstruction to the airways and airspaces caused by the disease process. This is demonstrated in a reduction in forced expiratory volume (FEV1) – a measure of the maximum volume of air that can be expelled during the first second of forced expiration. As such, it has been hypothesized that this decrease in FEV1 is caused by changes to the elastic and rheological properties of the respiratory tissues, which in turn affect the movement of air in the respiratory tract.

Studies have also shown that diabetics tend to have a higher total lung capacity than healthy individuals. This could be explained by the fact that, due to the impaired membrane integrity, the alveoli and lung epithelial cells are able to absorb a higher amount of air, resulting in a greater chest wall space occupancy. Other respiratory capacities that have been observed to be reduced in diabetics include oxygen uptake and carbon dioxide removal, indicating an impaired gas exchange in the respiratory system.

CONCLUSION

In conclusion, diabetes mellitus is associated with an alteration of the morphofunctional appearance of the respiratory system, including structural abnormalities, alterations of bronchi and bronchioles, thickening of bronchial smooth muscles, increased deposition of mucopolysaccharides, disruption to the airflow, and impaired gas exchange. Such changes are caused primarily by the diabetes-induced alterations in the alveolar wall and airspaces, as well as by treatment-induced side effects, such as secondary conditions, steroids and insulin therapy, and the use of certain medications. As such, it is important that diabetics receive palliative measures and adequate medical and lifestyle management in order to prevent or reduce the severity of the morphofunctional and respiratory alterations caused by the disease. Diabetes mellitus is a serious and potentially life-threatening condition, which makes it very important for people to understand what it is and the steps they can take to manage the condition. Education is key to the successful management of diabetes, and it is

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important to stay in contact with a medical team to ensure the best possible care. With proper management and lifestyle changes, people with diabetes can live a long and active life.

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Volume-19, February 2023
ISSN: 2749-3644

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