The intersection of pulmonology and environmental health

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INTRODUCTION

Pulmonology is a medical specialty focused on the diagnosis and treatment of respiratory system diseases. It encompasses a broad range of conditions affecting the lungs and related structures, including the pleura, airways, and chest wall. Pulmonologists are trained to manage both common and complex pulmonary disorders, providing crucial care for patients with chronic respiratory conditions. Lung transplantation may be considered for patients with end-stage disease. Pulmonary Hypertension (PH) is a condition characterized by high blood pressure in the arteries of the lungs. It leads to increased workload on the right side of the heart and can result in heart failure. PH can be idiopathic or secondary to other diseases like COPD, heart disease, or blood clots in the lungs. Treatment often includes vasodilators, diuretics, and anticoagulants, depending on the underlying cause. In advanced cases, lung or heart-lung transplantation may be necessary. Lung cancer remains the leading cause of cancer-related deaths worldwide. The 2 main types are Non Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC). Smoking is the most significant risk factor, though nonsmokers can also develop lung cancer, especially if exposed to radon, asbestos, or air pollution.[1,2] Symptoms include persistent cough, chest pain, hemoptysis (coughing up blood), and unexplained weight loss.

DESCRIPTION

Treatment is based on the stage and type of cancer and may involve surgery, chemotherapy, radiation therapy, and targeted biological therapies. Pulmonology relies on a variety of diagnostic tools to assess lung function and diagnose respiratory diseases. PFTs, including spirometry, measure lung volume, capacity, and flow rates. They are used to diagnose and monitor diseases like asthma, COPD, and pulmonary fibrosis. Spirometry measures the amount (volume) and speed (flow) of air a patient can inhale and exhale, providing essential information about airway obstruction. Bronchoscopy is a procedure that allows pulmonologists to visualize the inside of the airways using a flexible tube with a camera. It can also be used to collect tissue samples for biopsy, making it invaluable in diagnosing lung cancer, infections, and other diseases. Chest X-rays and High Resolution Computed Tomography (HRCT) scans are crucial in visualizing the lung parenchyma, pleura, and airways. HRCT is particularly useful for diagnosing interstitial lung diseases and pulmonary embolism, while X-rays are a first-line tool for assessing pneumonia, lung masses, and other abnormalities.[3,4] Polysomnography, or a sleep study, is used to diagnose sleep-related breathing disorders like Obstructive Sleep Apnea (OSA). OSA is associated with multiple health risks, including cardiovascular disease and diabetes.

CONCLUSION

Continuous Positive Airway Pressure (CPAP) therapy is the most common treatment for moderate to severe OSA. ABG analysis measures the levels of oxygen and carbon dioxide in the blood, providing insights into how well the lungs are oxygenating the blood and removing carbon dioxide. It is critical in evaluating respiratory failure, metabolic disorders, and the effectiveness of mechanical ventilation. Treatment strategies in pulmonology vary depending on the specific disease and its severity. These medications, including beta-agonists and anticholinergics, help relax the smooth muscles in the airways, improving airflow in conditions like asthma and COPD. Inhaled or systemic corticosteroids reduce inflammation in conditions such as asthma, COPD, and certain interstitial lung diseases.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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