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## **INTERNAL DISEASES THAT TRIGGER COUGH: CAUSES AND MECHANISM OF COUGH ARISING IN ABSCESS (PULMONARY CAVITARY SYNDROME)**

### ***Introduction***

Coughing is a common and often distressing symptom encountered in various pulmonary conditions, including pulmonary cavitory syndromes. These syndromes are characterized by the formation of cavities within lung tissue, which can arise from different etiologies, including infections, abscesses, and neoplasms. The cough associated with these conditions can be chronic, productive, and sometimes severe, significantly impacting a patient's quality of life. Understanding the underlying causes and mechanisms of cough in the context of pulmonary abscesses is crucial for effective diagnosis and management.

### ***Goal***

Overview of Pulmonary Cavitory Syndrome

### ***Material and methods of research***

Analysis of literary sources data on pulmonary cavity syndrome.

### ***The results of research and their discussion***

Pulmonary cavitory syndrome refers to a group of disorders that involve the formation of air-filled spaces or cavities within the lung parenchyma. These cavities can result from various pathological processes, including bacterial infections (such as those caused by *Staphylococcus aureus* or *Klebsiella pneumoniae*), fungal infections (e.g., *Aspergillus* species), or even malignancies. Pulmonary abscesses, which are localized collections of pus resulting from infection, represent a significant subset of pulmonary cavitory syndromes. The pathophysiology of abscess formation typically involves necrosis of lung tissue due to infectious agents, leading to the accumulation of necrotic debris and pus within a cavity. Clinically, patients may present with symptoms such as cough, fever, chest pain, and hemoptysis, necessitating prompt evaluation through imaging studies like chest X-rays or CT scans to identify the presence of cavitory lesions.

### ***Causes of Cough in Pulmonary Cavitory Syndrome***

The cough associated with pulmonary cavitory syndrome, particularly in the case of abscess formation, can be attributed to several interrelated factors. First and foremost, the presence of necrotic tissue and purulent material within the cavity irritates the bronchial mucosa and stimulates airway receptors responsible for the cough reflex. In addition to mechanical irritation, inflammatory mediators released during the infectious process can lead to increased mucus production and airway inflammation. This can result in bronchial obstruction and further exacerbate coughing. If there is a direct communication between the cavity and bronchial tree, secretions may drain into the bronchi, leading to irritation and stimulating cough. Furthermore, associated conditions such as pneumonia or bronchitis may complicate the clinical picture, leading to a more pronounced cough.

### Mechanism of Cough Reflex

The cough reflex is a complex physiological response that serves to protect the airways and clear irritants from the respiratory tract. It begins with the stimulation of sensory receptors located in the airway epithelium, including irritant receptors and C-fiber receptors, which are activated by various triggers such as mucus, pus, or inflammatory mediators present in conditions like pulmonary abscesses. Once these receptors are stimulated, they send afferent signals through the vagus nerve to the cough center in the medulla oblongata of the brainstem. In response, the medulla orchestrates an efferent pathway that coordinates a series of muscular contractions: a deep inhalation occurs first, followed by closure of the vocal cords, which builds up subglottic pressure. When the vocal cords open, this pressure is released explosively, expelling air from the lungs at high velocity. This rapid expulsion helps to clear secretions, foreign particles, or irritants from the airways. In cases of pulmonary abscesses, the presence of necrotic tissue and purulent material not only mechanically irritates the airway but also induces inflammation, leading to heightened sensitivity and hyperreactivity of the cough reflex, resulting in a persistent and often distressing cough.

### Clinical Features

Patients presenting with pulmonary cavitary syndromes often exhibit a constellation of symptoms that reflect underlying lung pathology. The most common symptom is a productive cough, which may be associated with purulent or foul-smelling sputum, particularly in cases involving anaerobic bacteria. Hemoptysis—coughing up blood—may occur if there is erosion of blood vessels or significant inflammation in the area surrounding the cavity. Systemic symptoms such as fever, chills, weight loss, and night sweats are indicative of an infectious process and are particularly prevalent in chronic infections like tuberculosis. Chest pain may also be reported, often described as pleuritic due to irritation of the pleura surrounding inflamed lung tissue. A thorough clinical evaluation is essential for identifying these symptoms and guiding further diagnostic investigations.

### Diagnostic Approaches

The diagnostic approach to pulmonary cavitary syndromes involves a combination of clinical assessment, imaging studies, microbiological testing, and laboratory evaluations. A comprehensive clinical evaluation begins with a detailed history that includes exposure risks (such as travel history for tuberculosis), smoking history, and potential occupational exposures. Physical examination findings may reveal respiratory abnormalities such as crackles or decreased breath sounds upon auscultation. Imaging studies play a critical role in diagnosis; a chest X-ray may initially reveal areas of opacity suggestive of cavitary lesions, but a computed tomography (CT) scan provides more detailed characterization of the cavities regarding size, wall thickness, and associated findings like nodules or lymphadenopathy. Microbiological testing is also pivotal; sputum cultures can help identify causative organisms, while bronchoscopy may be warranted if sputum samples are inconclusive. Laboratory tests such as complete blood counts can indicate leukocytosis suggestive of infection, and serological tests may be performed for specific pathogens when indicated.

### Management Strategies

Management of cough associated with pulmonary cavitary syndromes requires a multifaceted approach tailored to the underlying cause. In cases where bacterial infection is suspected, prompt initiation of empirical broad-spectrum antibiotics is crucial, with adjustments made based on culture results once available. For fungal infections such as aspergillosis, specific antifungal therapy (e.g., voriconazole) should be initiated promptly to prevent further complications. Supportive care measures may include bronchodilators to alleviate bronchospasm if present and

corticosteroids for certain inflammatory conditions; however, caution is warranted when using corticosteroids in infectious processes due to potential immunosuppressive effects. Surgical intervention may be necessary in cases where abscesses do not respond adequately to medical therapy or if they are large enough to cause significant symptoms or complications. Regular follow-up is essential to monitor treatment response and adjust management plans accordingly; repeat imaging may be required to assess resolution of the cavity or detect any complications arising during treatment.

### **Conclusion**

Cough associated with pulmonary cavitary syndromes is a significant symptom that reflects underlying lung pathology and warrants careful evaluation and management. A comprehensive understanding of its mechanisms, causes, and clinical implications enables healthcare providers to implement timely and appropriate interventions. An interdisciplinary approach involving pulmonologists, infectious disease specialists, and radiologists is often necessary to optimize patient outcomes. Early recognition and intervention are key components in preventing complications and improving the quality of life for affected individuals. By addressing both the cough and its underlying causes effectively, clinicians can significantly enhance patient care and recovery outcomes.

### **LITERATURE**

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**УДК 616.2-07-08**

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### **ADDITIONAL RESPIRATORY MURMURS: DIAGNOSIS, CAUSES AND CLINICAL SIGNIFICANCE**

#### **Introduction**

Respiratory murmurs are abnormal sounds heard during the auscultation of the lungs, produced by airflow through the airways. These sounds can provide critical information about the condition of the respiratory system. Respiratory murmurs are classified as adventitious (additional) breath sounds, which include wheezing, crackles, rhonchi, and stridor. They can indicate various respiratory conditions such as asthma, pneumonia, chronic obstructive pulmonary disease (COPD), or upper airway obstruction. Diagnosing these murmurs is crucial in clinical practice as they help healthcare providers identify respiratory conditions early, guide treatment decisions, and monitor disease progression. Recognizing and differentiating these murmurs, like the high-pitched whistling of wheezing, the crackling sound of rales, or the low-pitched rhonchi, is essential for improving patient outcomes and preventing complications.