

# Haemoptysis: Causes, Diagnosis and Management

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## Abstract

Haemoptysis, defined as the expectoration of blood from the respiratory tract, is a symptom that can be distressing, alarming and sometimes life-threatening. It can arise from various underlying conditions, ranging from benign to severe, making it a topic of significant concern in the field of pulmonary medicine. This article delves into the causes, diagnosis and management of haemoptysis, shedding light on this critical medical condition. Haemoptysis is often attributed to respiratory infections, particularly bronchitis and pneumonia. In these cases, inflammation and damage to the bronchial or lung tissue can lead to the presence of blood in the sputum. While mild and self-limiting in many cases, severe or recurrent infections may necessitate further investigation.

**Keywords:** Haemoptysis • Respiratory tract • Pulmonary medicine

## Introduction

Bronchiectasis is a chronic condition characterized by the abnormal widening and thickening of the bronchial tubes. This can result in the pooling of mucus and the development of infection, ultimately causing haemoptysis. Underlying causes of bronchiectasis can include cystic fibrosis, immunodeficiency, or recurrent aspiration. Tuberculosis is a notorious cause of haemoptysis, particularly in regions with high prevalence. The *Mycobacterium tuberculosis* bacteria can erode the lung tissue, leading to blood in the sputum. Timely diagnosis and treatment of tuberculosis are crucial to prevent further complications [1].

## Literature Review

Blood tests, sputum analysis and coagulation studies can provide additional information. Elevated levels of inflammatory markers may indicate infection, while coagulation abnormalities can suggest bleeding disorders. In cases where the source of bleeding remains elusive, pulmonary arteriography can be employed. This procedure involves the injection of contrast dye into the pulmonary arteries to identify the bleeding vessel. It is especially useful in life-threatening situations. The management of haemoptysis depends on the underlying cause and the severity of the bleeding. Treating the specific cause of haemoptysis is paramount.

## Discussion

NSCLC accounts for approximately 85% of all lung cancer cases. This is the most common form of NSCLC and often occurs in the outer regions of the lung. Adenocarcinomas are more likely to affect non-smokers and are frequently seen in women. Squamous cell carcinoma typically starts in the bronchial tubes' lining. It's strongly associated with smoking and can lead to symptoms like coughing, blood-tinged sputum and chest pain. This is the least common subtype of NSCLC. It typically grows and spreads more rapidly

than other NSCLC subtypes. SCLC is less common, accounting for about 15% of lung cancer cases. This type is notorious for its aggressive nature and rapid spread. It often starts in the central airways and is closely linked to smoking. Lung cancer is fundamentally a result of genetic mutations that lead to uncontrolled cell growth in the lungs [2].

Lung cancer is a significant concern in cases of haemoptysis, as it can manifest as an early symptom. Tumors can disrupt blood vessels, leading to bleeding into the airways. Lung cancer-associated haemoptysis is often a concerning sign and requires thorough evaluation. Traumatic injuries, such as rib fractures or blunt force to the chest, can cause haemoptysis. This is due to damage to the lung tissue, blood vessels, or airways. Immediate medical attention is essential in cases of severe trauma-related haemoptysis. Patients with advanced COPD are prone to haemoptysis, as chronic inflammation and recurrent infections can damage lung tissue. The frequent use of inhalers or steroids in COPD management can further increase the risk of haemoptysis. A pulmonary embolism is the sudden blockage of a pulmonary artery, usually caused by a blood clot that travels from another part of the body. This condition can lead to haemoptysis, often accompanied by chest pain and shortness of breath. Timely diagnosis and anticoagulant therapy are critical in such cases [3].

Some systemic vasculitides, such as Wegener's granulomatosis and Goodpasture syndrome, can involve the pulmonary vasculature and lead to haemoptysis. These conditions require specialized treatment to address the underlying autoimmune processes. Prolonged exposure to environmental toxins, such as asbestos, silica, or coal dust, can lead to lung diseases like asbestosis, silicosis and coal worker's pneumoconiosis, respectively. These conditions can cause haemoptysis and often necessitate occupational health assessments. A rare condition, idiopathic pulmonary hemosiderosis, often affects children and is characterized by recurrent episodes of pulmonary hemorrhage without a known cause. Its management involves addressing the underlying bleeding disorder and immunosuppressive therapy [4].

Accurate diagnosis of haemoptysis is crucial for determining its cause and guiding appropriate treatment. The patient's medical history is of utmost importance. Information regarding the onset, duration, frequency and associated symptoms of haemoptysis can help in narrowing down potential causes. Physicians may also inquire about smoking history, occupational exposures and previous lung conditions. A thorough physical examination can provide valuable clues to the underlying cause of haemoptysis. It may reveal signs of infection, lung cancer, or structural abnormalities. Chest X-rays and Computed Tomography (CT) scans are essential tools for evaluating the location and extent of lung pathology. These studies can help identify lung tumors, infections, bronchiectasis, or other structural abnormalities. Bronchoscopy involves the insertion of a flexible tube with a camera into the airways. This procedure allows direct visualization of the bronchial tree and helps identify the source of bleeding. It can also be used for therapeutic interventions such as bronchial artery embolization [5].

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This may involve antibiotics for infections, chemotherapy or radiation for lung cancer, or anticoagulants for pulmonary embolism. Underlying lung diseases like bronchiectasis and COPD may require bronchodilators, steroids, or mucolytic agents. Supportive measures are essential, especially for mild cases. This includes bed rest, adequate hydration and monitoring vital signs. In severe cases, oxygen therapy may be necessary. Bronchoscopy can be therapeutic as well as diagnostic. It allows for interventions such as cauterization of bleeding vessels, the application of hemostatic agents, or the placement of stents to manage airway obstruction [6]

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## Conclusion

Haemoptysis is a significant clinical symptom that can have various underlying causes, ranging from benign to life-threatening conditions. The key to effective management is prompt and accurate diagnosis, followed by targeted treatment. An understanding of the causes, diagnostic techniques and treatment options for haemoptysis is crucial for healthcare professionals and patients alike, as it can make the difference between a benign episode and a life-threatening emergency. Preventive measures, such as smoking cessation, vaccination against infectious diseases and occupational safety practices, are essential in minimizing the risk of haemoptysis in susceptible individuals.

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## Conflict of Interest

There are no conflicts of interest by author.

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## References

1. Lynch III, Joseph P., Mark Wurfel, Kevin Flaherty and Eric White, et al. "Usual interstitial pneumonia." *Semin Respir Crit Care Med* 1 (2001): 584-4662.
2. White, Eric S., Michael H. Lazar and Victor J. Thannickal. "Pathogenetic mechanisms in usual interstitial pneumonia/idiopathic pulmonary fibrosis." *J Pathol* 201 (2003): 343-354.
3. Lepparanta, Outi, Ville Pulkkinen, Katri Koli and Riika Vahatalo, et al. "Transcription factor GATA-6 is expressed in quiescent myofibroblasts in idiopathic pulmonary fibrosis." *Am J Respir Cell Mol Biol* 42 (2010): 626-632.
4. Chibbar, Rajni, Francis Shih, Monica Baga and Emina Torlakovic, et al. "Nonspecific interstitial pneumonia and usual interstitial pneumonia with mutation in surfactant protein C in familial pulmonary fibrosis." *Mod Pathol* 17 (2004): 973-980.
5. Teuwen, Laure-Anne, Vincent Geldhof, Alessandra Pasut and Peter Carmeliet. "COVID-19: The vasculature unleashed." *Nat Rev Immunol* 20 (2020): 389-391.
6. Biller, Leah H. and Deborah Schrag. "Diagnosis and treatment of metastatic colorectal cancer: A review." *J Am Med Assoc* 325, (2021): 669-685.

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