Unusual “cardiac” cause of hemoptysis: Accessory cardiac bronchus

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ABSTRACT
Hemoptysis is a common presenting feature of tuberculosis, pulmonary parenchymal malignancy, bronchiectasis, or a cardiac pathology as mitral stenosis. Relevant clinical history, physical examination, laboratory investigations, and radiology usually identify the cause of hemoptysis in the majority of the cases. We report a case of a 50-year-old male with intermittent hemoptysis which was the presenting feature of accessory cardiac bronchus.

Keywords: Cardiac bronchus, hemoptysis, thoracotomy

CASE REPORT
A 50-year-old male known smoker, smoking 7-8 cigarettes/day for the last 10 years presented with complaints of intermittent hemoptysis for last 2 years. He denied any history of low-grade fever, loss of appetite, night sweats, weight loss, chest pain, trauma, or breathlessness. There was no history of exposure to any drugs (antiplatelets, anticoagulants) or bleeding disorder. His sputum for acid-fast bacilli (AFB) was negative. Diagnostic evaluation for his symptom on the previous occasions at other hospitals was inconclusive with a normal reported chest X-ray and computed tomography (CT) scan exam. Fiberoptic bronchoscopy findings reported blood in right and left main bronchial system. Presently, his physical examination revealed a temperature of 37°C, pulse rate of 82/min, blood pressure of 142/84 mmHg, respiratory rate of 12/min, oxygen saturation of 98%, normal respiratory sounds, and a normal chest X-ray. Laboratory investigations revealed a normal blood value including normal platelet count and coagulation parameters. His transthoracic echocardiography revealed normal right and left ventricular functions without any evidence of mitral stenosis/right-sided infective endocarditis or pulmonary

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hypertension. High-resolution CT scan showed localized pocket of air density medial to bronchus intermedius on axial [Figure 1] and coronal sections [Figure 2] suggesting accessory cardiac bronchus. No lung tissue was associated with accessory cardiac bronchus. Subsequent fiberoptic bronchoscopy confirmed accessory cardiac bronchus originating medially from bronchus intermedius opposite to the right upper lobe bronchus, whose lumen was partially obscured by small a clot. Bronchial and pulmonary angiography revealed no abnormality in tracheobronchial tree or pulmonary drainage.

A right thoracotomy was performed and accessory cardiac bronchus was identified. ACB extended 3 cm toward pericardium without any associated lobule. It was resected with preservation of vagus nerve. Bronchus intermedius was closed in two layers. Subsequent pathological examination revealed a tubular structure ending blindly with cartilage rings, inflamed and ulcerated mucosa with the collection of neutrophils and fibrous tissue. Hemothysis was attributed to this inflamed vascularized accessory cardiac bronchus. The patient is asymptomatic currently with no recurrent hemoptysis at 6-month follow-up.

**DISCUSSION**

Brock defined accessory cardiac bronchus as a “supernumerary bronchus arising from the inner wall of the right main bronchus or intermediate bronchus opposite to the origin of the right upper lobe bronchus.”[2] ACB is a rare anomaly of the tracheobronchial tree with an incidence of 0.07–0.5%.[3,4] Three types of ACB are described on the basis of bronchographic appearance: 1) Diverticular type with short ACB with a blind end and no associated lung tissue, 2) Tubular type with distal terminal branches ventilating a small lobule, and 3) Intermediate type with long diverticulum ending blindly without terminal branching or a ventilated lobule.[5] ACB in our case was diverticular type. ACB runs in a caudal direction paralleling the intermediate bronchus toward the heart, hence, the name “cardiac bronchus.” ACB is lined by normal bronchial mucosa and has cartilage within its wall, which distinguishes it from an acquired fistula or diverticulum.[2]

ACB is usually an incidental finding reported on CT scan, presenting as an air pocket medial to bronchus intermedius with or without an abnormal area of circumbronchial enhancing tissue representing vestigial lung tissue.[5] Usually present in isolation, ACB has been described with other tracheobronchial anomalies as tracheal bronchus and with anomalous drainage of the right pulmonary artery into left atrium.[7,8] ACB may present with hemoptysis, malignant changes,[9] or middle lobe syndrome. ACB may be symptomatic due to infection in pooled up secretions in a blind diverticulum. Middle lobe syndrome has been described in conjunction with ACB as any infection in ACB rapidly spreads to the middle lobe bronchus, leading to consolidation due to its close anatomical origin with ACB (on lateral and medial walls of bronchus intermedius, respectively).[10] Although easily recognizable on CT scan and fiberoptic bronchoscopy by its characteristic origin medially from bronchus intermedius, the ACB was missed in our patient on bronchoscopy and CT scan by two different physicians on different occasion, probably suggesting ignorance about its occurrence and low incidence of symptomatic presentation. The present case report highlights the possibility of accessory cardiac bronchus as an unusual cause of hemoptysis and its management by surgical resection if symptomatic.
Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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