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Case Report

Diagnosis of bronchial artery aneurysm by computed tomography: a case report

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ABSTRACT

Bronchial artery aneurysm is a rare vascular abnormality, with an incidence of <1% based on diagnosis by selective bronchial angiography. It is manifested in various forms, ranging from an incidental finding on radiologic examination to life-threatening hemorrhage resulting from aneurysm rupture. We report a case of a 60-year-old man with a mediastinal bronchial artery aneurysm which was incidentally detected on chest computed tomography.

Introduction

Bronchial artery aneurysm is a rare vascular abnormality, with an incidence of <1% based on diagnosis by selective bronchial angiography [1]. The first case of bronchial artery aneurysm was reported in a patient with syphilis in 1930 [2,3]. The aneurysm varies in presentation, ranging from an incidental finding on radiologic examination to life-threatening hemorrhage resulting from aneurysm rupture [4]. Bronchial artery aneurysms are classified on the basis of lesion as mediastinal or intrapulmonary aneurysm [5]. However, computed tomography (CT) reports of mediastinal bronchial artery aneurysm are rare. Here, we report a case of a 60-year-old man with a mediastinal bronchial artery aneurysm which was incidentally detected on chest CT images. This report was approved by the Institutional Review Board of our institution.

Case report

A 60-year-old man was visited with suspected pneumonia at another hospital in December 2016. The volume of pleural effusion increased despite administration of antibiotics. Investigative CT findings revealed right pleural effusion with diffuse pleural enhancement (Fig. 1A). The right pleural effusion was removed by thoracentesis. Cytologic findings of the pleural effusion revealed the possibility of malignant cells.

The patients were transferred to our hospital for evaluation of pleural effusion and hidden malignancy in January 2017. The blood pressure, heart and respiratory rates, and body temperature at the time of admission were 110/70 mmHg, 70 beats/min, 20 breaths/min, and 36.5°C, respectively. The serum white blood cell and C-reactive protein levels were 6.1×10^3 cells/μL and 0.209 mg/dL, respectively. He

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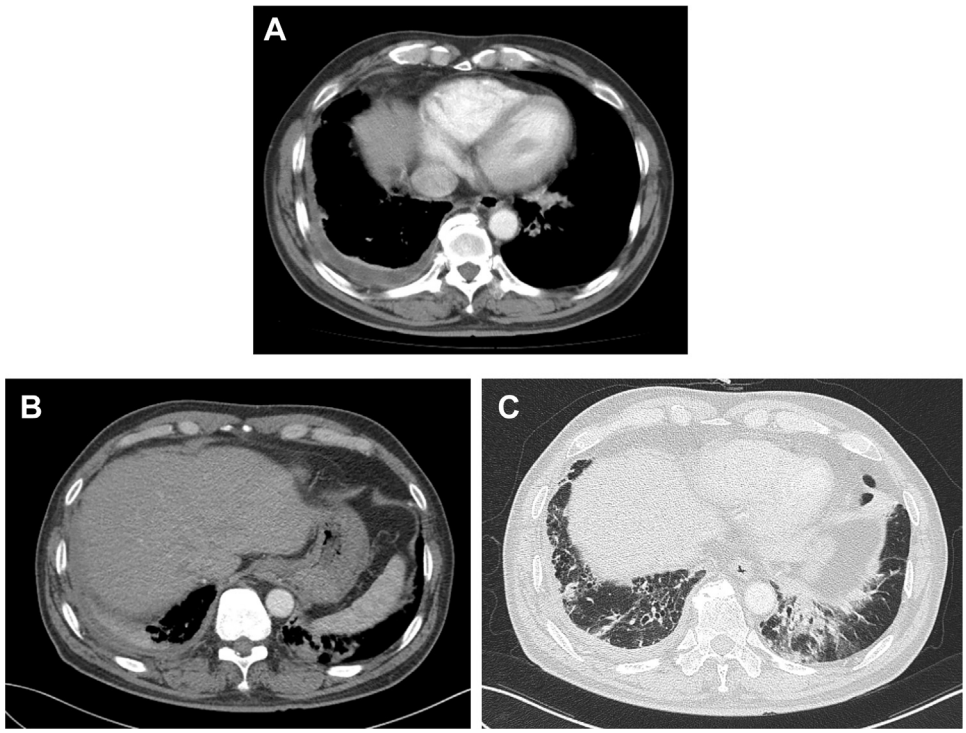

Fig. 1 – (A) Enhanced outside-chest CT image shows a small volume of right pleural effusion with pleural enhancement. (B, C) Follow-up enhanced axial CT findings revealed a decrease in the volume of right pleural effusion relative to the observed in the outside-chest CT image. (C) Bronchiectasis with bronchial wall thickening and mucoid impaction are observed in the both lower lobes. There were peribronchial and subpleural consolidations in the both lower lobes.

had a history of treatment with recurrent pneumonia and suspected diffuse panbronchiolitis. The patient was evaluated by CT with a contrast agent. Relative to the previous CT findings, contrast-enhanced CT findings revealed a decrease in the volume of the right pleural effusion (Fig. 1B). Axial and coronal reformatted images show tubular and varicoid bronchiectasis with bronchial wall thickening and mucous plugging involving the right middle lobe, left lingula, and both lower lobes that can be seen in cases of recurrent infection (Fig. 1C). In addition, a well-defined and round-shaped 11-mm lesion was observed adjacent to the descending aorta at the level of the left bronchus. The lesion exhibited a similar degree of contrast enhancement as the aorta, which indicated that the lesion was vascular (Fig. 2A). The contrast-enhancing lesion connected to the left bronchial artery on axial imaging (Fig. 2B). On evaluation of multiplanar reformatted (Fig. 3) and volume-rendered images (Fig. 4), the contrast-enhanced lesion was revealed to be a focal aneurysmal dilatation at the origin of the left bronchial artery. Both bronchial arteries were hypertrophied. On comparison of the preset CT findings with those acquired in September 2009 (Fig. 2C), the bronchial artery aneurysm was found to have slightly increased in size from 8 to 11 mm. Further evaluation by positron emission tomography–CT and endoscopy revealed no hidden malignancies. Because of his medical conditions, the patient was not administered any immediate surgical or nonsurgical intervention.

Discussion

Bronchial artery aneurysm is a rare disease [1]. Although the etiology of bronchial artery aneurysm is unclear, congenital and acquired medical conditions have been reported to be associated with this disease [1,5]. Most cases of this disease have been reported among patients with pulmonary tuberculosis, atypical mycobacterial infection, bronchiectasis, pulmonary sequestration and agenesis, sarcoidosis, silicosis, vasculitis, trauma, atherosclerosis, and arteriovenous malformation [5]. Our case had a history of recurrent infection and suspected panbronchiolitis, resulting in bronchiectasis and consequent bronchial artery aneurysm formation. The common causative factors of bronchial artery aneurysm among all these conditions include increased blood flow and pressure in the bronchial arteries, and focal weakening or injury to the vessel wall [1–3]. Bronchial artery aneurysms are classified on the basis of location as mediastinal or intrapulmonary lesions [5]. Most lesions are located in the mediastinum, adjacent to the descending aorta and esophagus where the bronchial arteries arise from the aorta [6].

The symptomology of bronchial artery aneurysm varies according to the location of the lesion. Hemoptysis is the most frequent symptom of intrapulmonary bronchial artery aneurysms. Mediastinal bronchial artery aneurysms might manifest as hemothorax, hemomediastinum, superior vena cava