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CASE REPORT

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Bronchial artery aneurysm presenting with epigastric pain that improves with vomiting

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Abstract

A 64-year-old man presented to the emergency department with a chief complaint of epigastric pain that improved with vomiting. He was initially treated for gastrointestinal disease, but computed tomography (CT) showed a mediastinal haematoma and contrast-enhanced CT and bronchial arteriography showed a bronchial aneurysm. Bronchial artery aneurysm is a rare but potentially life-threatening condition that can lead to haemorrhagic shock if it ruptures. Patients with bronchial aneurysms may present with symptoms similar to that of gastrointestinal diseases owing to increased pressure in the mediastinum caused by mediastinal haematoma.

KEYWORDS

bronchial artery aneurysm, bronchial artery embolization, gastrointestinal symptoms, mediastinal haematoma

INTRODUCTION

Bronchial artery aneurysms are rare and may be asymptomatic. However, when they rupture, symptoms such as chest pain, back pain, epigastric pain, haemoptysis, haemothorax and mediastinal haematoma, in addition to non-specific symptoms, may occur, leading to haemorrhagic shock. Herein, we report the case of a patient who presented to the emergency room with a complaint of epigastric pain that improved with vomiting. It was initially treated as a gastrointestinal disorder but was essentially a ruptured bronchial aneurysm with mediastinal haematoma, for which emergency bronchial artery embolization (BAE) was performed. Only 10 cases of bronchial aneurysms with mediastinal haematoma have been reported in the past; we discuss the characteristics of these cases and report them here.

CASE REPORT

A 64-year-old man presented to the emergency department with a complaint of epigastric pain of 1 week duration, which was relieved by vomiting. He vomited in the emergency room on the day of his visit, and his symptoms disappeared. The patient was being administered apixaban for atrial fibrillation. Electrocardiography showed only atrial fibrillation without ST changes. Blood samples revealed only mild elevations in white blood cell count, creatinine phosphokinase (CPK) levels and D-dimer levels, with normal CPK-MB and troponin I levels. A plain chest computed tomography (CT) scan showed a 35-mm mass on the dorsal side of the trachea (Figure 1A) and food retention in the oesophagus on the oral side of the mass. The patient was discharged from the emergency room without further examination and was scheduled to visit a gastroenterologist.

The next day, the patient was referred to the Department of General Thoracic Surgery on suspicion of mediastinal haematoma based on the CT density value of the mass (approximately 60 Hounsfield units). Contrast-enhanced CT showed a 7-mm saccular aneurysm in the bronchial artery adjacent to the suspected haematoma (Figure 1B). Emergency bronchial arteriography showed a saccular aneurysm similar to that of the contrast-enhanced CT scan, and the proximal and distal sides of the aneurysm were coiled and isolated, respectively (Figure 1C,D). Bronchoscopy performed on the day after BAE showed that the mucosal surface was erythematous from the trachea to the tracheal bifurcation, and the membranous area was elevated owing to extramural compression (Figure 1E). The patient was discharged from the hospital 6 days later with no complications after BAE. Two weeks later, outpatient examination confirmed that the symptoms during the first visit had

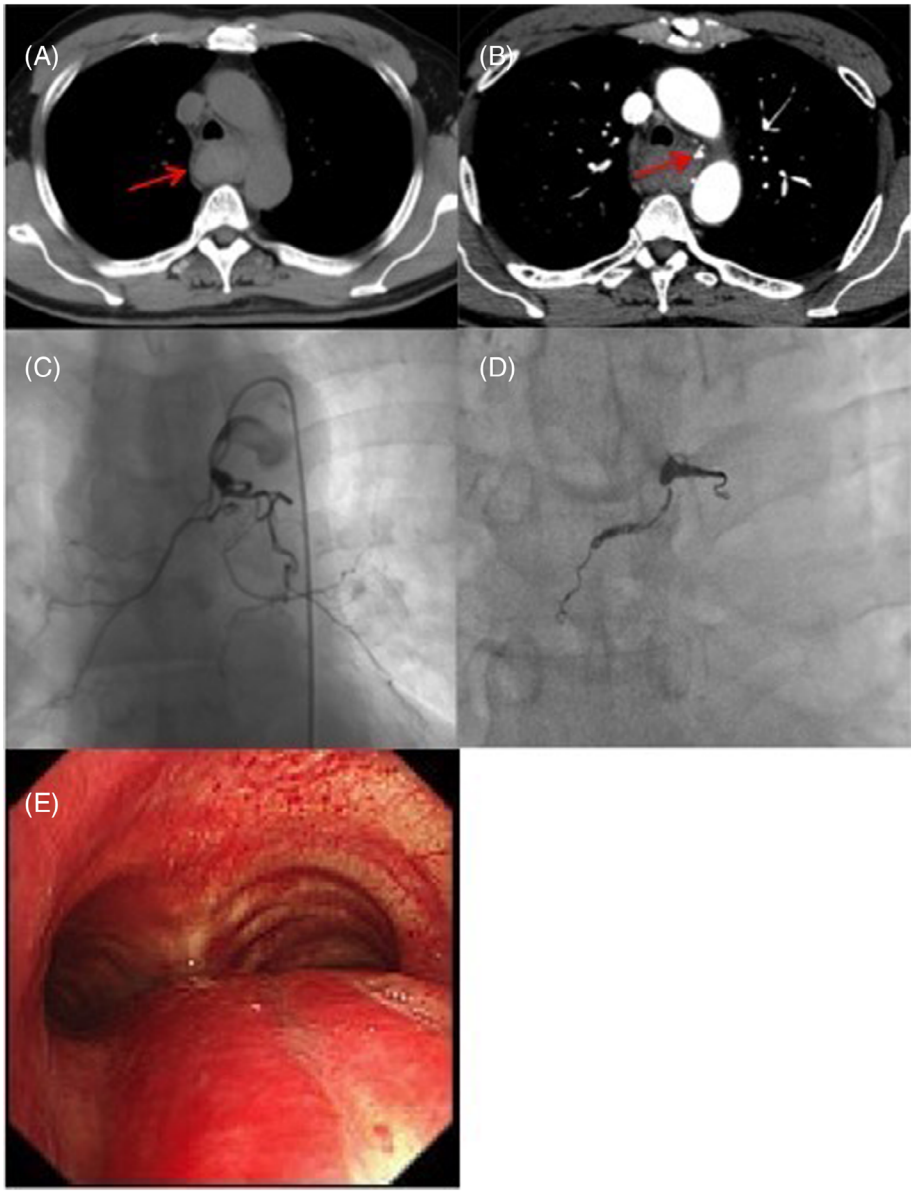

FIGURE 1 Plain chest computed tomography (CT) showed a mass with a diameter of 35 mm in the mediastinum that was suspected to be a haematoma (arrow) (A). Contrast-enhanced CT of the chest showed a 7-mm bronchial aneurysm (arrow), with no active bleeding observed (B). Bronchial arteriography showed a bronchial aneurysm as in the contrast-enhanced CT (C). Bronchial artery embolization (BAE) with coils was performed for the bronchial aneurysm (D). Bronchoscopy on the day after BAE showed erythema of the tracheal mucosa and membranous elevation, probably due to haematoma (E)

disappeared, and a CT scan 6 months later revealed that the bronchial aneurysm had not recurred and the haematoma had disappeared.

DISCUSSION

Bronchial aneurysm is a rare disease with few cases reported to date. San Norberto et al. reported 108 cases of bronchial aneurysm, including nine cases of mediastinal haematoma associated with ruptured bronchial aneurysm, excluding our case.[1–10] For bronchial aneurysms as a whole, symptoms were predominantly non-specific, including bloody sputum (30.5%) and chest pain (9.3%), and 10% of cases were asymptomatic. Chest and epigastric pain were present in all 10 patients with mediastinal haematoma, but seven (70%) had gastrointestinal symptoms such as epigastric discomfort and dysphagia (Table 1). If these gastrointestinal symptoms are present with chest pain, mediastinal haematoma should be considered as a differential diagnosis. In the present case, epigastric pain improved with vomiting, and food retention was observed in the oesophagus on the oral side of the mediastinal haematoma. In addition, bronchoscopy performed on the day after BAE showed that the tracheomembranous area was compressed

TABLE 1 Patient characteristics and clinical courses

Case	Age	Sex	Gastrointestinal symptoms	Non-specific symptoms	Diameter of aneurysm (mm)	Diameter of haemomediastinum (mm)	Active bleeding	Haemodynamics	Treatment
1[2]	61	M	Dysphagia	Chest pain	10	57	None	Stable	Embolization
2[3]	63	M	None	Chest pain	5	NA	Present	Unstable	Embolization and aortic stent graft
3[4]	66	M	Vomiting	Epigastric pain	NA	NA	None	Unstable	Embolization
4[5]	55	M	Dysphagia	Chest pain	10	NA	None	Stable	Embolization
5[6]	76	F	Dysphagia	Chest pain	NA	55	Present	Stable	Embolization
6[7]	70	M	None	Chest pain	15	NA	None	Stable	Embolization
7[8]	79	F	Dysphagia	Chest pain	7	NA	Present	Unstable	Embolization and surgical drainage
8[9]	82	NA	None	Chest pain	7	NA	Present	Unstable	Embolization
9[10]	41	M	None	Chest pain	NA	NA	None	Stable	Embolization
Our case	64	M	Vomiting	Epigastric pain	7	35	None	Stable	Embolization

Abbreviation: NA, not available.

extrinsically, and the mucosa was elevated close to the location of the haematoma. These reflect the increased intra-mediastinal pressure caused by the mediastinal haematoma, and we believe that the epigastric pain was improved by vomiting the retained food from the area compressed by the haematoma. In this case, the patient was haemodynamically stable; therefore, the emergency physician did not investigate further, and 'watchful waiting' was instituted for gastrointestinal disease. When a patient presents with gastrointestinal symptoms such as chest pain and vomiting, ischaemic heart disease, such as acute coronary syndrome, should be ruled out in the emergency room. However, bronchial aneurysm with mediastinal haematoma from its disruption should be considered as a differential diagnosis because it may lead to haemorrhagic shock and requires emergency treatment.

There was no active bleeding from the bronchial aneurysm and the haemodynamic status was stable. From previous reports and our case report, only four (40%) of the 10 patients with mediastinal haematoma had active bleeding,[3,6,8,10] and all of them underwent BAE or aortic stent grafting. Aneurysms vary in size. The bronchial artery is less than 1.5 mm at the origin of the aorta and narrows towards the periphery to less than 0.5 mm. In this case, the aneurysm enlarged to 7 mm, which is clearly abnormal. There are reports of haemorrhagic shock even with a 5-mm diameter aneurysm; therefore, regardless of the presence of active bleeding or the diameter, therapeutic intervention such as BAE should be considered urgently if a bronchial aneurysm is observed.

We encountered a case of bronchial aneurysm with a chief complaint of epigastric pain that improved with vomiting. In addition to chest and epigastric pain, gastrointestinal symptoms, especially vomiting and dysphagia that may be due to increased intra-mediastinal pressure, should be associated with intra-mediastinal rupture of a bronchial artery aneurysm when making differential diagnoses. Bronchial aneurysms, even if small in diameter, can lead to haemorrhagic shock if ruptured, and should be treated urgently.

AUTHOR CONTRIBUTION

Kazuki Hayashi was a major contributor in writing the manuscript. All other authors contributed to data collection and interpretation, and critically reviewed the manuscript. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST

None declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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