CASE REPORT

Mycotic bronchial artery aneurysmal rupture in the early stage of lung abscess: A case report

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SUMMARY

Symptomatic bronchial artery aneurysm warrants urgent intervention. It has a known association with pulmonary infection caused by *Staphylococcus aureus*. We hereby report an elderly lady with a ruptured left superior bronchial artery mycotic aneurysm. She was in the early stages of treatment for a left lung abscess. She had multiple episodes of haemoptysis following which she underwent a left lower lobectomy. Presentation of lung abscess with a concurrent ruptured mycotic aneurysm warrants early surgical intervention and can be curative as seen in this case.

KEY WORDS:

Bronchial artery aneurysm

INTRODUCTION

Bronchial artery aneurysm (BAA) is rare compared to aneurysms involving other arteries like the aorta and intracranial arteries. It has been reported in less than 1% of cases of selective bronchial arteriography.[1] Congenital cardiac abnormalities such as patent ductus arteriosus and septal defects are commonly associated with it. They can be categorised by size and aetiology either being acquired or congenital. The common acquired causes include atherosclerosis, trauma and pulmonary infection like pulmonary tuberculosis (TB), bronchiectasis and lung abscess. Presentation of patients with BAA is dependent on its size, location and its relation to the adjacent structures. Rupture of BAA located in mediastinum may cause haemothorax and mediastinal haemorrhage, which can manifest with tearing pain, whereas rupture of the intrapulmonary aneurysm can give rise to massive haemoptysis. Once symptoms are present urgent surgical intervention is needed.

We hereby report an elderly lady in her early stages of medical treatment for a lung abscess who underwent an urgent left lower lobectomy via a thoracotomy for haemoptysis. She had a lung abscess that had eroded into a mycotic BAA.

CASE REPORT

A 61-year-old lady presented with worsening shortness of breath for five days associated with fever, chills and rigors, and a productive cough with yellowish sputum. She also had left sided pleuritic chest pain. In view of unresolving symptoms she sought treatment at the casualty department. A chest radiograph showed a left pleural effusion and left lower lobe collapse. She was suspected to have a lung tumour and was scheduled for an elective biopsy of the suspected tumour.

On admission, she appeared weak and tachypnoeic. She was febrile with a temperature of 38.5 degrees centigrade. Her blood pressure was 113/74 mmHg with a pulse rate of 102 beats per minute. Her respiratory examination was suggestive of a left pleural effusion evidenced by stony dullness on percussion. Rest of the systems were unremarkable.

Ultrasound of the thorax revealed a multi septated pleural effusion with pleural thickening. A diagnostic ultrasound guided pigtail catheter thoracocentesis was done Both pus and sputum were sent for TB and other bacterial cultures. She was subsequently empirically started on intravenous metronidazole while waiting for the formal culture reports.

Despite being on antibiotics, her condition did not improve. She was still having daily spiking temperatures with increasing white cell counts (from 11,000 to 23,000 x 10 U/L). Though the drainage from the pigtail was gradually decreasing, serial chest radiographs did not show significant changes over the left lower zone. Subsequent contrast enhanced computed tomography (CECT) of the thorax done showed consolidation of the entire left lower lobe with a hypodense area within the consolidation measuring 8.4cm x 7.1cm x 8.0cm suggesting a lung abscess.

Results of her septic workout showed Methicillin Sensitive *Staphylococcus aureus* (MSSA) in the blood, sputum and pus. Based on this result, her antibiotic was changed to intravenous cloxacillin and was treated as disseminated MSSA septicaemia secondary to a left lung abscess. During treatment, she had haemoptysis of fresh blood, for which a repeat CECT of the thorax was done which showed a mycotic aneurysm approximately 1.5cm x 1.8cm with mural thrombus arising from the left superior bronchial artery (which was not present in the earlier CECT thorax). The multiseptated abscess had also increased in size to 11.8cm x 9.1xm x 12.3cm with a hematoma within its cavity.

With the above findings, she underwent a left lower lobe lobectomy via a left thoracotomy. Her intraoperative findings were a large pulsating mass covering the whole of the left lower lobe measuring 14.0cm x 12.0cm x 8.0cm with two feeding vessels arising from the left inferior bronchial artery.

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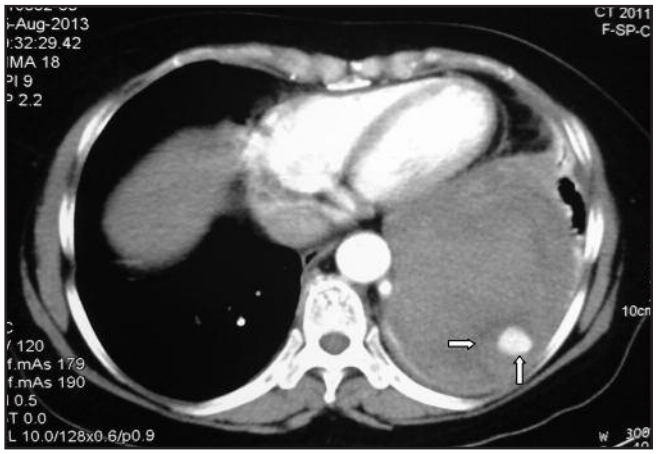

Fig. 1: Computed tomography of the thorax showing a well-defined hyperdense nodule (vertical arrow) arising from the left bronchial artery surrounded by layering of slight hyperdensity (horizontal arrow), likely representing mycotic aneurysm with mural thrombus.

They were individually ligated and divided. The left lower lobe was mobilised and stapled. The stapled bronchial stump was further reinforced with continuous 3/0 prolene in two layers and tested for air leaks. Once haemostasis was secured the thoracotomy wound was closed in the routine fashion. The left lower lobe and stump of the left inferior bronchial artery were sent for histopathological examination (HPE).

Her postoperative period was mainly uneventful except for atrial fibrillation which was easily controlled with oral amiodarone. HPE report of the arterial wall showed inflammation within the tunica media with infiltration of foamy macrophages which were suggestive of false aneurysm.

DISCUSSION

Mycotic aneurysm is an abnormal focal arterial dilation caused by localised destruction of the vessel wall by infection. A false, or pseudoaneurysm is a collection of blood or hematoma that has leaked out of the artery but confined by the surrounding tissue. Our case has shown appears to have been an evolving true aneurysm that became a pseudoaneurysm. The repeated CECT thorax showed a hematoma collection within the abscess cavity as a result from an extension of the adjacent suppurative process. There was inflammation in the tunica media as demonstrated in the HPE which was suggestive of inflammatory process following erosion of the pyogenic materials of the breached vascular wall.

The chest radiograph may show nonspecific features like consolidation, infiltrates, nodular lesions, perihilar masses or cavities as we have seen in our case. There are multiple non-invasive radiological investigations that can be performed in mapping out the patho-anatomical demography including CECT, spiral CT, and multi detector CT (MDCT) angiography. CT scan helps localizing the site of haemorrhage in 63-100% of patients with haemoptysis, a rate higher than that of fibro-optic bronchoscopy (FOB).[2] CECT can accurately identify the size and location of BAA while spiral CT will provide superb visualization of the pulmonary vasculature. It shows distal airways beyond the reach of the FOB and the lung parenchyma surrounding these airways. However MDCT angiography is the best diagnostic procedure in identifying the cause of haemoptysis as well as in viewing enlarged bronchial and non-bronchial systemic or pulmonary arteries.[3] Bronchial artery aneurysms are well depicted with MDCT.[3] Meanwhile, the proximal BAA may be diagnosed on echocardiography.[4]

Most reported cases of BAA in the literature have been treated with percutaneous catheter embolization by using either detachable balloons or metal coils. The surgical approach depends on the location of the aneurysm. The proximal BAA are commonly approached through surgical repair or arterial banding, and the peripherally located aneurysm like mycotic BAA in this case, surgical resection is the option.[5] Our patient was was not subjected for embolization as this facility was not available at our centre. Surgical resections are commonly reserved in those who failed embolization or with recurrent massive haemoptysis following multiple previous embolization.

The presence of haemoptysis is a sign of high risk for rupture and an indication for definitive treatment.[4] Early surgical intervention is warranted regardless of the presence or absence of symptoms as BAA is potentially life threatening. The abscess was surgically drained once the diagnosis was confirmed to prevent further erosion of the aneurysm as both of them were located next to each other. Early surgical resection was curative in our patient.

CONCLUSION

Concurrent presentation of ruptured BAA and lung abscess warrants early attention as both of these illnesses are potentially life threatening and both have resolved following surgical intervention.

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REFERENCES

1. Zhang LJ, Yang GF, Lu GM. Noninvasive diagnosis of bronchial artery aneurysm using dual-source computed tomography angiography. Acta Radiol. 2008; 49(3): 291-4.
2. Yoon W, Kim JK, Kim YH, Chung TW, Kang HK. Bronchial and nonbronchial systemic artery embolization for lifethreatening hemoptysis: A comprehensive review. Radiographics. 2002; 22(6): 1395-409.
3. Ramakantan R, Bandekar VG, Gandhi MS, Aulakh BG, Deshmukh HL. Massive hemoptysis due to pulmonary tuberculosis: Control with bronchial artery embolization. Radiology. 1996; 200(3): 691-4.
4. Luce JM. Pulmonary arteriovenous malformations and other pulmonary vascular abnormalities. In: Murray JF, Nadel JA, eds. Textbook of Respiratory Medicine, 2nd edn. Philadelphia:WB Saunders Company, 1994: 1710-24.
5. Bartter T, Irwin RS, Nash G. Aneurysms of the pulmonary arteries. Chest 1988; 94(5): 1065-75.