

Post traumatic pulmonary pseudoaneurysm requiring pneumonectomy: a case report

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Abstract: A 57-year-old male presented with progressive exertional dyspnea, cough, and hemoptysis. He underwent a chest computed tomography (CT) that demonstrated a 27 cm × 20 cm right chest mass that was causing a local mass effect. Pertinent history revealed that the patient had suffered a severe chest trauma from a MVA in 1981. The patient underwent workup including: needle localized biopsy, bronchoscopy and endoscopic biopsy. There was considerable concern for a malignant process and a subsequent right pneumonectomy with en bloc resection of the chest wall and diaphragm was performed. The final pathology concluded the mass to be a large pseudoaneurysm. Pseudoaneurysms after traumas are extremely rare, especially blunt trauma, and should be considered once other etiologies have been excluded.

Keywords: Aneurysm; pneumonectomy; pulmonary arteries; pulmonary veins; trauma; trauma blunt

Submitted May 19, 2016. Accepted for publication Jun 15, 2016.

doi: 10.21037/atm.2016.06.09

View this article at: <http://dx.doi.org/10.21037/atm.2016.06.09>

Introduction

Penetrating trauma is the most common cause of traumatic pulmonary artery pseudoaneurysms (PAPAs) (1). The condition should be suspected when there is a history of substantial chest trauma along with consolidated well-circumscribed masses that are discovered on imaging. Traumatic PAPAs are rare lesions, and are treated with various techniques ranging from aneurysmectomy, arterial branch ligation, pulmonary resection, or angiographic embolization (2,3).

Case presentation

A 57-year-old male with a history of severe chest trauma from a motor vehicle collision in 1981 in which he had six fractured ribs with “flail” chest, hemopneumothorax requiring tube thoracotomy, and pulmonary contusions, presented to his primary care physician in 2013 for a concern of hemoptysis. He underwent a chest X-ray which was concerning for a mass and referred to a pulmonologist

who ordered a computed tomography (CT) of the chest, which demonstrated a large soft tissue mass in the right chest however he was temporarily lost to follow-up. In November 2013, the patient had gone to the local county hospital for progressive hemoptysis, where he underwent an additional CT of the chest, abdomen, and pelvis which re-demonstrated a 27 cm × 20 cm right chest mass (*Figure 1*) that was causing significant local mass effect and compression with shift of the heart and mediastinum to the left. After he was admitted to the hospital, the patient underwent further diagnostics, which included a CT-guided biopsy that demonstrated “eosinophilic appearing necrotic tissue”, but was negative for malignancy. When patient’s condition improved and he was discharged with referred to the local university medical center for further evaluation by the cardiothoracic surgical team where a bronchoscopy with washings and aspiration along with endobronchial ultrasound guided biopsy was performed; demonstrating degenerating cellular debris and hemosiderin deposition, without features of malignancy. A CT positron emission

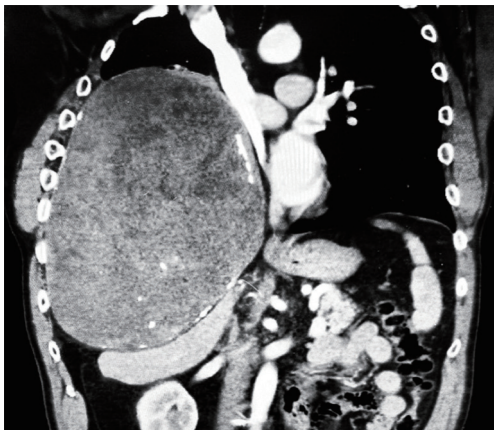


Figure 1 Computed tomography showing a large hypodense soft tissue intrathoracic mass occupying the right hemithorax.

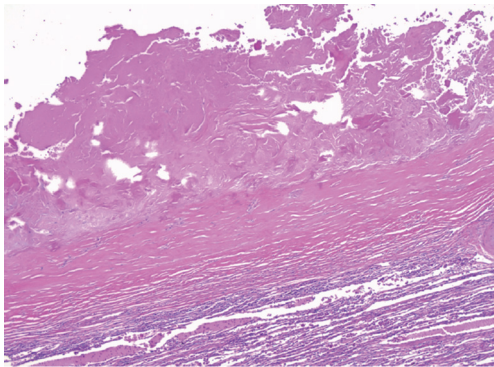


Figure 2 Degeneration clotted blood with surrounding thick fibrous wall, firmly adherent to adjacent lung parenchyma (bottom of photomicrograph); H&E, 20 \times .

tomography (PET) was also performed which only showed “fingers of FDG activity” and was otherwise “photopenic”.

Despite the lack of malignancy on the biopsy specimen, the underlying cause of the mass was unknown. After at length discussions with consulting services, consensus was that and the mass was still concerning for an aggressive process and surgery was undertaken. Once in the chest cavity there was noted to be extensive neovascularization of the nearby structures without clear tissue planes and it was decided here, that a right pneumonectomy with en bloc resection of the involved chest wall and diaphragm was to be performed. The diaphragm was reconstructed with a polytetrafluoroethylene mesh.

Pathologic examination of the resected material demonstrated a 25-cm aggregate of degenerating clotted

blood surrounded by a thick fibrous wall (*Figure 2*). Cholesterol clefts and metaplastic bone formation were also prominent features seen in the fibrous wall. Normal vascular wall elements (e.g., intimal lining, elastic laminae, and smooth muscle) were lacking. Infectious organisms or malignancy were not seen. The pathologic findings were those of a massive intrathoracic pseudoaneurysm.

Discussion

The majority of PAPAs are complications of Swan-Ganz catheter placement (4,5). Other causes of PAPAs include infectious such as: (bacterial, mycobacterial, mycotic, or syphilitic), and vascular abnormalities found in such diseases such as (Marfan’s, cystic medial necrosis, Behcet’s, and other diseases causing vasculitis) (6). The infrequency of traumatic PAPAs is secondary to the high mortality associated with pulmonary artery injury, immediate repair of injuries, and the fact that it is a low pressure system (1,2,7,8).

It is not uncommon for PAPAs to escape discovery for several months to years, and until this report the longest latency reported was 30 years (3,7,8). Symptoms can vary from a completely asymptomatic patient to a patient presenting with dyspnea, cough, chest pain, and hypoxia with the most consistent presenting symptom being hemoptysis (3,7). The treatment of choice for PAPAs is the utilization of coil embolization (6). However, observation and spontaneous resolution have been mentioned in the literature (1). In the case of trauma many of the aneurysms are not amenable to coil embolization.

Regardless of symptoms or time interval, a patient with both a history of chest trauma and imaging demonstrating a large intrathoracic mass, a traumatic pulmonary artery pseudoaneurysm should be considered in the differential diagnosis. In retrospect, there was a very low consideration for pulmonary pseudoaneurysm given the size and delayed presentation of this lesion, while an angiogram was considered at one point, it was given little weight given the clinical picture. Accurate diagnosis of the lesion requires obtaining a thorough history resulting in a high index of suspicion for a traumatic pseudoaneurysm and is greatly aided by pathologic examination of the resected material, both for diagnostic confirmation and to exclude infection or malignancy.

Acknowledgements

None.

Footnote

Conflicts of Interest: Meeting Presentation—General Thoracic Surgery Club 2015, Naples, Florida, USA.

Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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Cite this article as: Theerman I, Choi M, Fowler A, Copeland H, Heimes J, Hasaniya N, Deisch J, Wallen JM, Zaheer S. Post traumatic pulmonary pseudoaneurysm requiring pneumonectomy: a case report. *Ann Transl Med* 2016;4(12):242. doi: 10.21037/atm.2016.06.09