Case Report

Idiopathic Spontaneous Hemothorax: A Case Report and Review of the Literature

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Abstract

Spontaneous hemothorax is the accumulation of blood within the pleural cavity in the absence of an inciting traumatic or iatrogenic cause [1]. This condition is uncommon and the medical literature on this unique diagnosis is mainly limited to case reports and series [2,3]. The etiology is variable and includes; connective tissue disorders (vascular Ehlers-Danlos syndrome, Marfan syndrome), tumors (angiosarcoma, neurofibromatosis type-1) and miscellaneous causes (endometriosis, exostosis) [1]. In some cases however, no associated etiology is found and the condition is referred to as an idiopathic spontaneous hemothorax [4].

Patients may present with symptoms ranging from chest pain and dyspnea to features of life-threatening shock. Chest Tomographic (CT) scans are often used to confirm the diagnosis as well as rule out differential diagnoses. Chest CT angiograms or thoracic angiograms can also be valuable diagnostic tools, the latter allowing for possible therapeutic interventions. They can be successfully managed and established treatment options include; angiography with embolization, tube thoracostomy drainage, thoracoscopic-assisted drainage and thoracotomy [5,6].

Case Presentation

A 76-year-old female who presented to the emergency department with sudden-onset, right-sided chest pain associated with shortness of breath. The pain had awoken her from sleep the night prior with a 10/10 severity score. She reported no preceding chest wall trauma. She had a thoracotomy with lung resection carried out for trauma 32 years prior. She thereafter required a repeat thoracotomy to effectively washout the empyema thoracis that had complicated her initial surgery. Her past medical history was only significant for essential hypertension which was well controlled on medications.

On physical examination, she was markedly tender around the right anterior chest wall over the 2nd, 3rd and 4th intercostal spaces with increased breath sounds heard over the right upper and middle lung zones. Her oxygen saturation in room air was in the mid 80's but she was otherwise hemodynamically stable. Her hemoglobin at presentation was 9.4 g/dL, a significant drop from her baseline value of 13.9 g/dL. A contrast-enhanced chest CT scan done showed a heterogenous, non-invasive right pleural-based lesion, measuring 11.3 cm x 10.2 cm x 8.5 cm, displacing the right upper lobe inferiorly with concomitant superior vena cava compression (Figure 1). An assessment of a right pleural-based tumor with intra-tumoral hemorrhage was made and she was scheduled for an image-guided biopsy of the lesion.

A CT-guided core needle biopsy was performed the next day and the preliminary pathology report showed only blood elements. It was based on this finding that our suspicion for a hemothorax was heightened. A chest CT angiogram was obtained which did not reveal any active bleeding or bleeding vessels supplying the hematoma. The patient proceeded to have a thoracic aortic angiogram which showed patent subclavian and intercostal vessels with no contrast extravasation (Figure 2). She then underwent thoracoscopic drainage of the hematoma during which approximately 500 mL of clot was evacuated. There was good lung expansion at the completion of surgery and two chest drains were left in place. Her post-operative course was uneventful; the chest tubes were removed on post-operative day 3 and she was discharged home on post-operative day 4. She was seen in the office one month following discharge and had returned to her full pre-morbid physical activity levels.

Discussion

A hemothorax is defined as the presence of blood in the pleural cavity, with the pleural fluid hemotocrit being at least 50% of the blood hemotocrit. The pleural fluid hemotocrit may also be as low as...
25% of the blood level if dilution has occurred as seen in the setting of a subacute bleed [7]. It is important to distinguish a true hemothorax from a hemorrhagic pleural effusion, with the latter typically associated with malignancies, granulomatous lung diseases and pulmonary infarction. A hemothorax indeed, represents a disruption in the wall of the thoracic or pleural-based vessels.

An overwhelming majority of the hemothorax encountered in surgical practice are traumatic in origin, particularly in the setting of penetrating or blunt chest injuries. Spontaneous bleeds into the pleural cavity are uncommon and can pose a diagnostic dilemma to the surgeon. Idiopathic spontaneous hemothorax is a very rare disease entity with only 3 cases reported prior to 2003 [7]. This case was unique in that the patient’s presenting symptoms and imaging findings mimicked a neoplastic process involving the right pleura; although, it may be argued that the acute onset of her symptoms was really not characteristic of a malignant disease. The fact that neither a bleeding source nor an underlying etiology was identified following thorough work-up made this case quite intriguing.

The management of spontaneous hemothorax is mainly dictated by the patient’s overall hemodynamic state, presence of local compressive symptoms, and size of the hemothorax as well as the age of the bleed. Options of definitive treatment include tube thoracostomy, angio-embolization, video-assisted thoracoscopic surgery and open thoracotomy. Clinically and hemodynamically stable patients with no evidence of ongoing bleed can successfully be managed non-operatively [5].

The thorascopic approach was used to treat this patient due its minimal invasive nature and its proven effectiveness in preventing empyema thoracis and fibrothorax, well-known long-term sequelae of retained hemothorax. We would have opted for an angio-embolization procedure had a bleeding source been found at her initial angiography.

In conclusion, this case highlights the diagnostic challenge that may be associated with a spontaneous hemothorax; thus, stressing the need for a high index of suspicion in patients presenting with acute-onset, unilateral chest pain and shortness of breath, especially when associated with supporting imaging findings. This will invariably avoid unnecessary invasive diagnostic work-up and delays in treatment.

References