

Case Report

Primary Spontaneous Haemopneumothorax: An Overlooked Emergency

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Abstract

Primary spontaneous haemopneumothorax (PSHP) is a rare condition. Potentially grave consequences do occur as a result of a failure to reach the diagnosis early. We report a case of a 17-year-old male who presented with a picture of PSHP but was later also found to have a component of haemothorax. He underwent thoracoscopy which was converted to thoracotomy. A torn vascular adhesion was the source of bleeding which was clipped and haemostasis was achieved.

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Key words: Primary spontaneous haemopneumothorax, Emergency, Thoracotomy.

Introduction

Primary spontaneous haemopneumothorax (PSHP) is rare and potentially grave emergency if not addressed promptly. It is defined as the presence of air and blood in the pleural cavity in the absence of trauma. It was first reported by Whitaker in 1879.¹ Early recognition based on the clinical as well as radiological criteria is important and the key to management. Once diagnosed, there are several options for the treatment which include observation, chest tube insertion, video assisted thoroscopic surgery (VATS) or thoracotomy. The operative option is advocated to prevent subsequent complications, such as empyema, fibrothorax or persistent air leak.

Case Report

A 17-year-old male, not known to have any previous medical illnesses or on current medications, presented to the emergency department with a sudden onset of chest pain and respiratory distress. He was not involved in any strenuous activity at the time of onset and there was no history of trauma. He was brought immediately to the hospital. Upon arrival, he was anxious and apprehensive looking with respiratory distress. His initial vital signs were: pulse 136 per minute, blood pressure (BP) 104/78mmHg and saturation on pulse oximetry 94% (at room air). Chest auscultation revealed decreased air entry over the left hemithorax with a hyperresonant percussion note. A chest radiograph (postero-anterior view; Figure 1) showed a moderate 60% pneumothorax on the left side with an air-fluid level and a collapsed lung. A decision was taken to insert a chest tube. A tube (size 32F) was inserted in the 5th intercostal space just anterior to the mid-axillary line. Upon insertion of the



Figure 1. Initial chest radiograph (postero-anterior view) demonstrating air-fluid level and pneumothorax.

tube, the initial drainage was 650cc of blood. The tube was connected to under-water seal system and as per protocol for pneumothorax cases, -20cm H₂O suction was applied. Routine laboratory investigations revealed: white blood cells 9000 (cells/mL), haemoglobin 14g/dL, haematocrit 35% and platelets 225X1000/uL. Liver function test (LFT) and renal function test (RFT) were within normal limits. His coagulation profile; PT 14s, PTT 28s and INR 1.1 were within normal limits. The post-chest tube chest radiograph showed re-expansion of the lung with a residual pneumothorax (Figure 2). The patient condition did not improve over the following hours. He collected almost 800cc over 6 hours (>100 cc/hr)

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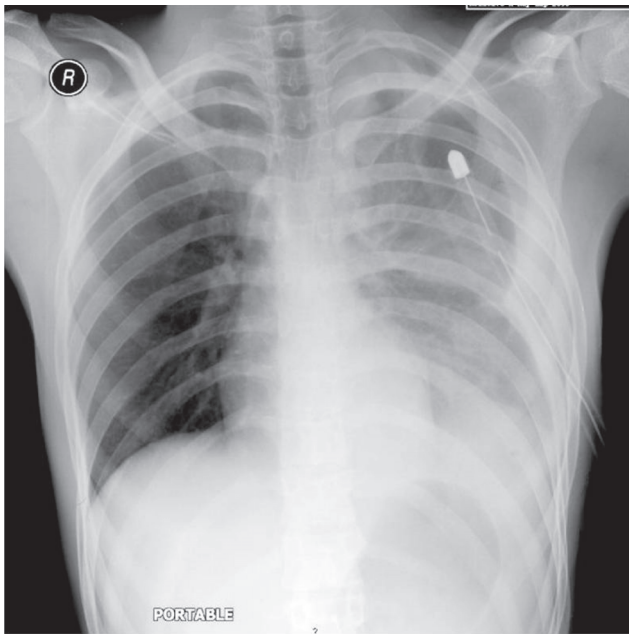


Figure 2. Chest radiograph (postero-anterior view) after chest tube insertion with residual haemothorax.

with persistent tachycardia and his haemoglobin dropped to 9g/dL as well as the haematocrit to 21%. Computed tomography (CT) of chest (Figure 3 A, B) showed blebs in the left apex with a significant amount of haemothorax. At this moment decision was taken to proceed with operative option. Video-assisted thoracoscopic surgery (VATS) was utilised initially but due to extensive adhesions, cause of which was not known, it was difficult to proceed safely. Therefore, conversion to a limited postero-lateral thoracotomy was done and a big clot was evacuated in addition to 800cc of blood. The source of bleeding was identified. It seems to be a torn vascular adhesion close to the left subclavian vessels. It was clipped and hemostasis was achieved. With a terminal anastomosis end-stapler device, the diseased apex was excised. Chest tube was inserted. The patient had an uneventful post-

operative course and he was discharged in a stable condition. Chest radiograph at the time of discharge showed complete lung expansion with no residual disease. Follow up showed no residual problems. The histopathology of the resected specimen showed multiple subpleural blebs contained within the visceral pleura with chronic inflammatory changes and fibrosis corresponding to the adhesion sites. No aberrant congenital vessel could be seen.

Discussion

Primary spontaneous haemopneumothorax is defined as the accumulation of air and blood in the pleural cavity in the absence of trauma.² Ohmori *et al*³ criteria to diagnosed PSHP is >400cc blood as the initial drainage. The first reported case was in 1879 by Whitaker.¹ Pitt *et al*⁴ described this entity in details in 1900. The PSHP is considered rare with an incidence of 1% to 12% of all cases of spontaneous pneumothorax and as a recent review even rarer at 2% to 7.3%.^{5,6} Most reports are from Asian countries.⁷ It affects young adults who are in otherwise good health. The average age is 17-44 years (mean 26 years). It is common in males with a male: female ratio 4:1.² It is considered a potentially grave emergency if not recognised with mortality reaching 25% in some series. Non-operative complications have to be considered, such as empyema, fibrothorax and persistent air leak.⁸ The most common symptom is chest pain and dyspnoea (80%). However, dyspnoea is more prominent in patient with PSHP in comparison to patients with spontaneous pneumothorax alone.⁵ It is usually sudden in onset. Hypovolaemic shock is present in 30% to 46% of patients.

The diagnosis is based on the clinical presentation, radiography and chest tube yield. Clinical presentation includes chest pain, dyspnoea, pallor and symptoms and signs of hypovolemic shock. Radiographic signs include pneumothorax, air-fluid level, mediastinal shift or scoliosis. A chest tube yield of more than 400cc of blood is diagnostic.^{3,5,6} The likely

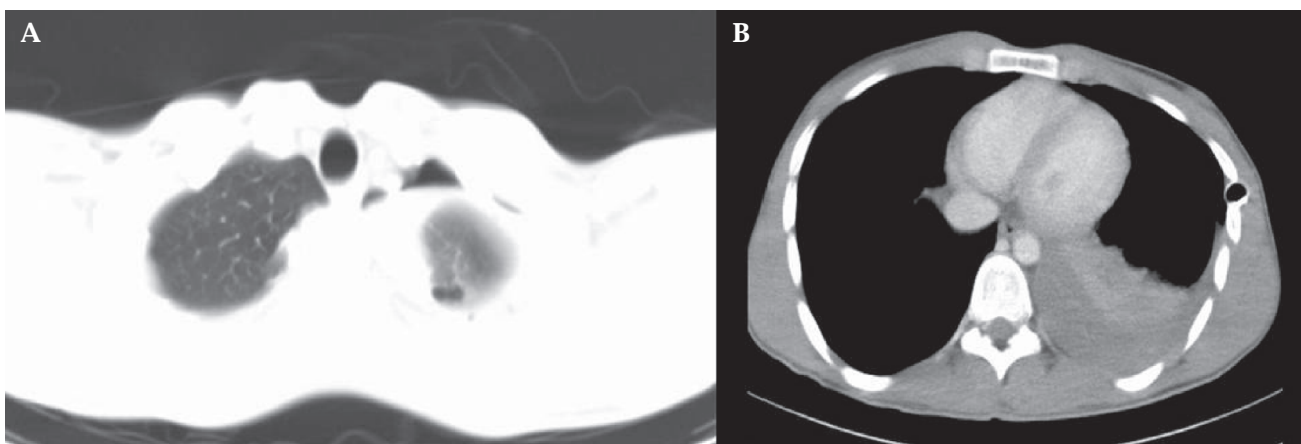


Figure 3. Computed tomography of chest (A) (Mediastinal window) demonstrating the retained haemothorax; (B) (Lung window) demonstrating apical blebs.

mechanisms include; torn adhesions, ruptured vascularised bulla or torn congenital aberrant vessel between parietal pleura and bulla.^{4,8-10} Tatebe *et al*¹¹ found that this aberrant vessel is abnormal with mucoid degeneration, sclerotic changes and fibrosis of media and intima. These abnormal vessels and the negative intra-thoracic pressure lead to sustained bleeding.^{8,11} Management options include: conservative observation, chest tube drainage, VATS or thoracotomy.⁸ Some reports advocate a conservative role if the bleeding is <24 hours.^{7,8} The operative indications include: haemodynamic instability, chest tube drainage >100 mL/h for 6 hours, 1L initial drainage, persistent air leak for more than 7 days or failure of lung expansion. A distinction has to be made between traumatic haemopneumothorax and PSHP since only 5% of the trauma cases require operation compared to the majority in PSHP.⁷ It is advocated to intervene early in the course of PSHP because of the risk complications such as retained clots, empyema, fibrothorax, impaired lung expansion or persistent air leak which reaches 30% in some series.⁷ Judgment on the chest tube drainage is not totally reliable due to the possibility of tube malfunction or obstruction by a clot. Thoracotomy is through lateral thoracotomy or axillary thoracotomy. The VATS may be an alternate since it decreases pain, hospital stay and scar but it was shown that it increases the blood transfusion requirements and it is not indicated in haemodynamically unstable patients where thoracotomy is preferred.⁸ Primary spontaneous pneumothorax has to be suspected if the patient presents with low levels of haemoglobin and haematocrit with no coagulation abnormalities. The presence of air fluid level is the most important indicator. It is observed in taller patients with lower body mass index.⁵ In females with such case, catamenial pneumothorax has to be ruled out especially if it occurs 72 hours before menstruation.¹²

Recurrence has not been reported after successful operative interventions.

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