

Case series of haemothorax secondary to avulsed bullae vessel

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SUMMARY

Haemothorax refer to the bleeding in the pleural space. It is commonly due to iatrogenic, blunt or penetrating chest trauma. Non-traumatic haemothorax is a rare entity that can potentially lead to life threatening complications. The initial management of both traumatic and non-traumatic haemothorax includes resuscitation and stabilisation of the patient. We would like to present two cases of non-traumatic haemothorax secondary to an avulsed bullae vessel.

INTRODUCTION

Sudden haemothorax can occur in pneumothorax when there is a sudden change of pressure causing the lung to re-expand.¹ This could potentially tear off an adherent vessel. Depending on the vessel torn, it could cause either severe bleeding leading to a cardiorespiratory compromise (arterial) or temporary bleeding (venous).²

CASE REPORT

Case 1 – Right hemopneumothorax secondary to an avulsed vessel on the right upper lobe bullae.

A 25-year-old man with no comorbidity, presented with dyspnoea over three days duration. At the emergency department, chest radiography showed right apical pneumothorax measuring 5cm. He was treated as right sided primary spontaneous pneumothorax. He improved clinically and radiologically after the needle aspiration. Unfortunately, after 12 hours of admission, he developed respiratory distress requiring the insertion of a chest tube. During the chest tube insertion, 1.6 litre of fresh blood gushed out. He was resuscitated with fluid and blood products. Urgent computed tomography (CT) thorax showed a right moderate haemopneumothorax (depth of haemothorax was 4.8cm) with the chest tube coursing through the right 6th intercostal space and the tip projecting towards the posterior right upper thorax (Figure 1). The cardiothoracic team performed an urgent right thoracotomy. Intra-operatively, a bullae was seen at the apex of the right upper lobe adhering to the superior vena cava (SVC). An avulsed vessel was seen at the site of adhesion which was still oozing. Apical bullectomy was done using the linear cutter. The avulsed vessels was clipped with LIGA clips. The apex is roughened using a

Surgicos. About 350cc of blood and clots were evacuated from the right pleural cavity. This is not a case of traumatic chest tube insertion. He made a good recovery and was discharged well.

Case 2 – Left hemopneumothorax secondary to an avulsed vessel on the left apical bullae.

A 20-year-old man with no comorbidity, presented with sudden dyspnoea and left sided chest tightness. Chest radiography showed a left pneumothorax and needle aspiration was performed. He improved clinically and radiologically after the needle aspiration. However, chest radiography done the next day due to worsening dyspnoea and hypotension showed a left meniscus sign. A chest drain was inserted which drained haemorrhagic effusion. He was resuscitated with fluid and blood products due to hypotensive shock. An emergency left thoracotomy showed a ruptured left apical bullae (figure 2). Fortunately, the bleeding stopped from the avulsed vessel on the bullae. Apical bullectomy was done using linear stapler (80mm and 60mm). There were multiple bullae seen at the left upper lobe lung apex. The apex is roughened using a Surgicos. The rest of the lungs and pleural cavity were clear. Intra-operatively, around 700cc of blood and blood clots were evacuated from the left pleural cavity. The chest drain did not cause any injury. He made a smooth recovery and was discharged well.

DISCUSSION

Spontaneous haemopneumothorax (SHP) was first described by Laennec in 1828 and is associated with 1-12% of all spontaneous pneumothorax.¹ Spontaneous haemothorax occurs because of accumulation of blood within the pleural spaces in the absence of trauma. It can be associated with underlying adhesions within the pleural cavity or rupture of vascularised bullae or due to a small non-contractile aberrant vessel between the parietal pleural and bullae.² Pneumothorax is a known complication of bullae. Spontaneous haemopneumothorax is a common cause of haemothorax with a reported incidence of 5% seen in patients with pneumothorax.³

Haemothorax can occur concomitantly in pneumothorax if there is any torn vessel involved.³ Patients can deteriorate

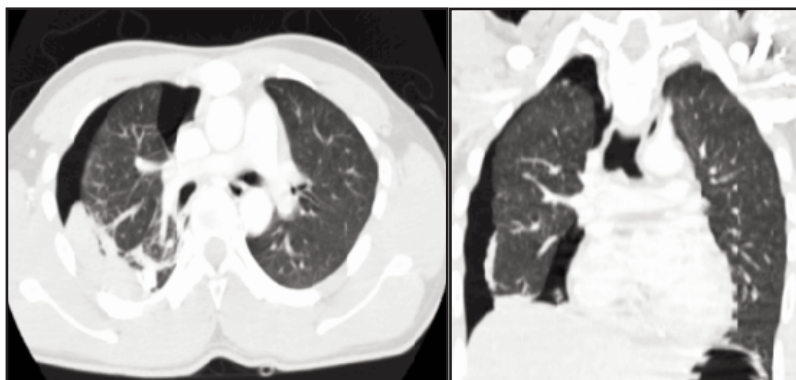


Fig. 1: (Case 1) : CT thorax shows evidence of right pneumohemothorax.

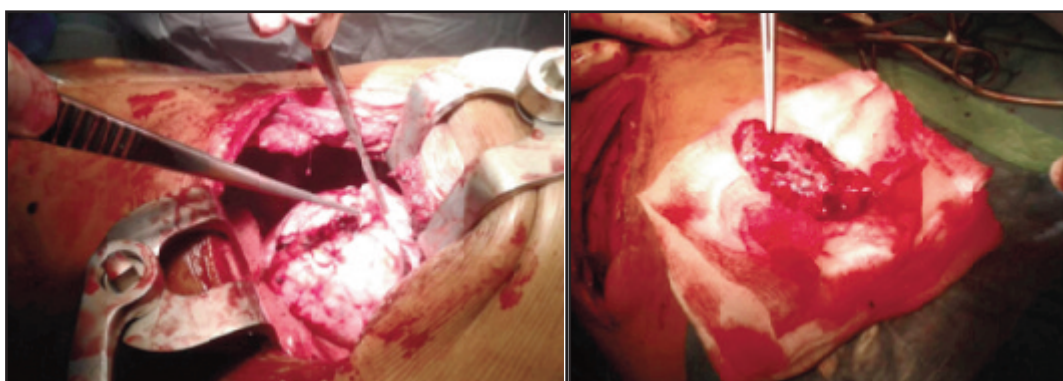


Fig. 2: (Case 2) : Left thoracotomy for ruptured bullae and the bullae was resected.

quickly due to the hemodynamic instability as a result of the continuous blood loss. Due to the pneumothorax, there is absence of tamponade effect from the lung while blood is accumulating in the pleural space leading to rapid development of hypovolemic shock.⁴

Management of spontaneous haemothorax includes early diagnosis along with adequate resuscitation. Some studies suggest that a haematocrit of more than 50% within the pleural effusion is necessary to rule out a bloody effusion.^{2,5} Tube thoracostomy is required to evacuate the haemothorax and improve lung re-expansion.⁴ In haemodynamically stable patients, a computed tomography of the thorax can provide done can provide important anatomical information. In haemodynamically unstable patients, early surgical approach is favoured to secure the bleeding. If there is diffuse bullous disease seen intra-operatively, a pleurectomy is mandated which is not seen in both of the cases described above.

CONCLUSION

Haemothorax can occur in a case of pneumothorax post drainage due to a torn adherent vessel. This cause is probably under-recognised due to its rarity. This two reported cases demonstrated that despite our close vigilance and adherence to the current guidelines, rare complications from needle aspiration can still occur. We recommend a longer observation period post needle aspiration in order to reduce the morbidity and mortality due to such incidence.

CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest in the subject matter discussed in their manuscript.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patients' consent forms. In the form, the patients have given their consents for their images and other clinical information to be reported in this journal. The patients understand that their name name and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

REFERENCES

1. John Hopkins Textbook of Cardiothoracic Surgery, General Thoracic Surgery, David D. Yuh MD, Second edition.
2. Nagashima O, Suzuki Y, Iwase A, Takahashi K. Acute haemorrhage in a giant bulla. Intern Med 2012; 51; 2673.
3. Tsuchida M, Nakayama K, Shinonaga M, Tatebe S, Yamaguchi A. Video-assisted thoracic surgery for thorascopic resection of giant bulla. Surg Today 1996; 26: 349-52.
4. Patrini D, Panagiotopoulos N, Pararajasingham J, Gvinianidze L, Iqbal Y, Lawrence DR. Etiology and management of spontaneous hemothorax. J Thorac Dis 2015; 7(3): 520-6.
5. Hsu NY, Shih CS, Hsu CP, Chen PR. Spontaneous hemopneumothorax revisited: Clinical approach and systemic review of the literature. Ann Thorac Surg 2005; 80: 1859-63.