



International Journal of Surgery

Journal Homepage: ijsopen.org

Case Report

Recurrent Haemothorax Secondary to the Aberrant Vessel and Rib Bone Spurs: Coincidence or Correlation? A Case Report

Adli Azam MR^{1,3*} and Aida AA^{2,3}

¹Department of Cardiovascular and Thoracic Surgery, Faculty of Medicine, Universiti Teknologi MARA, Malaysia

²Department of Imaging, Hospital Sultanah Aminah, Johor Baru, Malaysia

³Gleneagles Hospital, Medini, Johor Baru, Malaysia

ARTICLE INFO

Article history:

Received: 22 June, 2023

Accepted: 17 July, 2023

Published: 28 July, 2023

Keywords:

Recurrent haemothorax, aberrant vessel, rib bone spurs, vats procedure, hemostasis

ABSTRACT

There are reports of spontaneous or recurrent haemothorax, in which an aberrant vessel or rib spur is the cause. We report a case of 13 years old male who presented twice with spontaneous haemothorax which bleeding from an aberrant vessel was the apparent cause on the first encounter and was later found to have a rib spur. He underwent left VATS procedure which was well tolerated without any complications.

© 2023 Adli Azam Mohammad Razi. Published by International Journal of Surgery

1. Introduction

There are case reports on spontaneous or recurrent haemothorax, in which an aberrant vessel or rib spur is the cause. However, there was no report in which both pathologies occur on the same patient. An aberrant vessel is an abnormal vessel that arises from an unexpected location, and one of the pathophysiology postulated it is due to angiogenesis secondary to inflammation. Bone spur (also called osteophyte) is a bony projection that develops along bony edges and undergoes biomechanical changes due to local inflammation e.g. infection, trauma, and degenerative arthritis [1, 2]. As both bleeding causes can be due to similarities in origin, this presentation suggests a correlation rather than coincidence.

2. Case Presentation

A 13-year-old boy presented with sudden chest pain and shortness of breath while playing basketball. On arrival at the emergency department, he was clinically pale, tachycardic and hypotensive (BP 70/40mmHg, HR 110/min). CXR showed significant left pleural effusion (Figure 1). An intercostal drainage was inserted and drained 1 litre of blood. He underwent urgent left VATS (video assisted thoracic surgery) exploration due to the nature of the emergency. Intraoperatively, the cause of acute bleeding was found to be originating from an aberrant

vessel (parietal to visceral pleura) that arose from the lateral chest wall to lingular segment of the lower lobe. The lower lobe collapsed with evidence of ruptured bullae on the respective part of the lung. Otherwise, no other bleb or bullae was found elsewhere. Hemostasis was secured by surgical clip application and cauterisation on the aberrant vessel. Wedge resection was performed on the lung segment with ruptured bullae and part of the aberrant vessel. Postoperatively was uneventful, and he was discharged well after 5 days. Histopathology of the resected lung was reported as benign lung parenchyma with focal emphysematous change, patchy chronic inflammation, and bullae formation.

He returned back to the emergency department after 3 weeks with a complaint of chest pain which gradually increase over 1 day. He was clinically mild pallor and was hemodynamically stable (BP 110/70mmHG, HR 90/min). CXR showed left pleural effusion with lower lobe collapse (Figure 2). Subsequent CT scan reported a large hematoma with hydropneumothorax, in addition to left anterior 5th rib spur (Figure 3). The patient was subsequently undergone left VATS. Intraoperatively noted small and superficial lung laceration caused by the rib spur (Figure 4). The rib spur was excised. After hematoma evacuation and pleural irrigation, the lung was well expanded without any evidence of active bleeding. Postoperatively was uneventful. The patient was allowed to go home on day 3 after surgery. Histopathology of the rib spur was reported as mature bony tissue with inflammation.

*Correspondence to: Adli Azam Mohammad Razi, Department of Cardiovascular and Thoracic Surgery, Faculty of Medicine, Universiti Teknologi MARA, Gleneagles Hospital, Medini, Johor Baru, Malaysia; E-mail: adlirazi75@gmail.com



FIGURE 1: Chest radiograph on the first admission showing left pleural effusion occupying 2/3 of the hemithorax with mass effect causing mediastinal shift to the right.



FIGURE 2: Chest radiograph during second admission showing recurrent left pleural effusion with adjacent atelectasis.

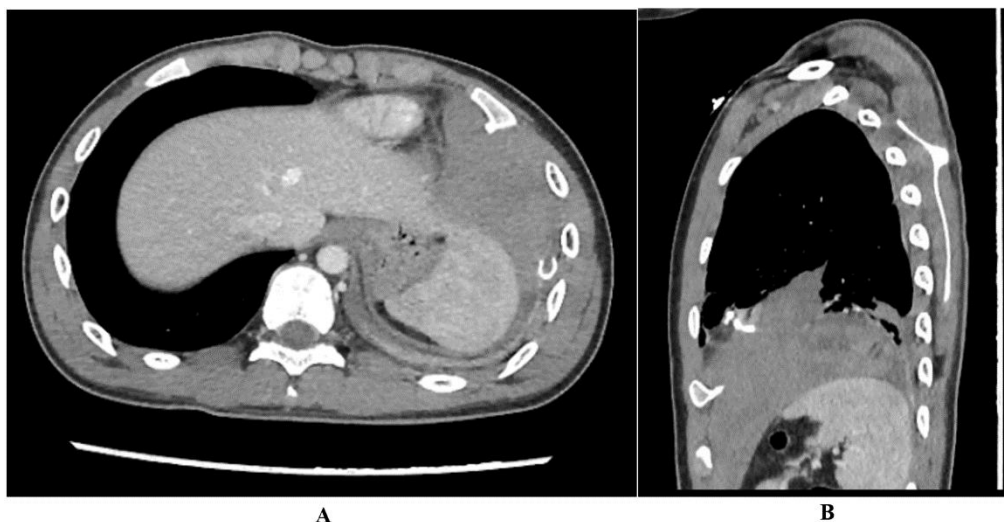


FIGURE 3: Contrast enhanced CT thorax in **A)** axial and **B)** sagittal views, showing a bony spur at left 5th anterior rib, pointing posteriorly. Left hemothorax with adjacent consolidation.

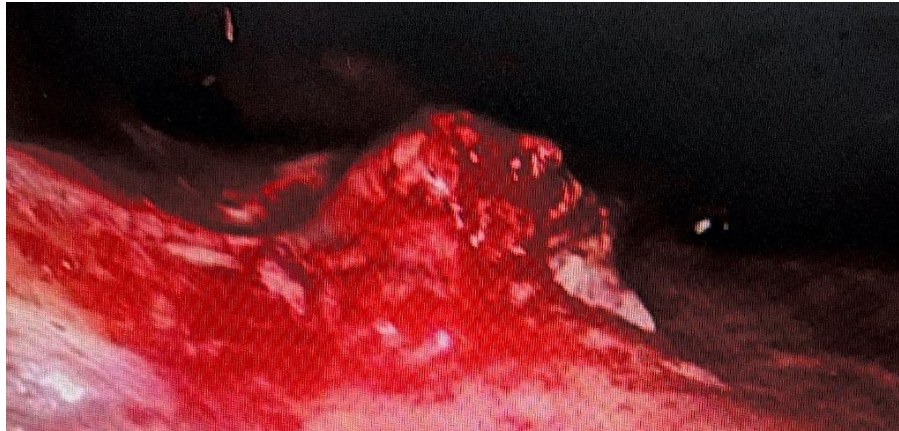


FIGURE 4: Rib spur.

3. Discussion

There are a number of case reports on spontaneous or recurrent haemothorax, in which aberrant vessel and rib spur were listed as the causes of the presentation. However, there was no report that both pathologies were concurrently present in the same patient. As in this patient, the first presentation was apparent to be an emergency and require urgent intervention. The decision was made based on the clinical presentation and basic imaging i.e. CXR. The obvious findings of active bleeding from the aberrant vessel were assumed as the primary cause of the acute bleeding. The presence of ruptured bullae on the lingula segment of the upper lobe supported the possibility of aberrant vessel formation due to inflammation secondary to undiagnosed ruptured bullae [3]. Despite an uneventful recovery, he presented again for a second time with a similar presentation. Stable haemodynamically allowed the CT scan to be performed and showed the presence of bone rib spur (Figure 2) with hematoma. Intraoperative findings consistent with lung laceration at the lower lobe during left VATS and the presence of rib spur which was located close to the camera port placement, thus explained the failure to be noticed during the first surgery.

The 2 different pathologies i.e. aberrant vessel and rib spur is not a coincidence, but rather a correlation. Repetitive trauma to the visceral pleura and lung parenchyma during the respiratory cycle lead to the development of haemothorax [4] as in the second presentation. However, constant injury to the visceral pleura and lung parenchyma also lead to chronic inflammation, as reported by the histological report from the resected lung segment. Angiogenesis has been established to be associated with inflammation [5, 6], which explained the formation of aberrant vessels that were postulated due to the repetitive injury caused by the rib spur. Evidence of focal emphysematous change and bullae formation demonstrated the damage to the alveoli. Although this pathology is well described in chronic obstructive airway disease and severe acute respiratory syndrome corona virus 2 e.g. COVID-19 [7], the focal alveolar damage is most probably due to the mechanical injury caused by the rib spur.

In summary, it is postulated that there is a correlation between rib spur and the aberrant vessel. This is most likely due to repetitive injury to the lung, causing focal bullae and emphysematous formation on the lung segment, in addition to the aberrant vessel development thus leading to recurrent haemothorax.

REFERENCES

- [1] Vinh Dao, Imane Chedid, Peter Shahid, et al. "Rib spur causing a hemothorax, pneumothorax, and diaphragmatic injury in a pediatric patient." *Radiol Case Rep*, vol. 18, no. 1, pp. 295-299, 2022. View at: [Publisher Site](#) | [PubMed](#)
- [2] Silke Aldrian, Lukas Zak, Barbara Wondrasch, et al. "Clinical and radiological long-term outcomes after matrix-induced autologous chondrocyte transplantation: a prospective follow-up at a minimum of 10 years." *Am J Sports Med*, vol. 42, no. 11, pp. 2680-2688, 2014. View at: [Publisher Site](#) | [PubMed](#)
- [3] D A Walsh, C I Pearson "Angiogenesis in the pathogenesis of inflammatory joint and lung diseases." *Arthritis Res* vol. 3, no. 3, pp. 147-153, 2001. View at: [Publisher Site](#) | [PubMed](#)
- [4] Assefa D., Murphy R.C., Bergman K., Atlas A.B. "Three faces of costal exostoses: case series and review of literature." *Pediatr Emerg Care*, vol. 27, no. 12, pp. 1188-1191, 2011. View at: [Publisher Site](#) | [PubMed](#)
- [5] Carla Costa 1, João Incio, Raquel Soares "Angiogenesis and chronic inflammation: cause or consequence?" *Angiogenesis*, vol. 10, no. 3, pp. 149-166, 2007. View at: [Publisher Site](#) | [PubMed](#)
- [6] J R Jackson, M P Seed, C H Kircher, et al. "The codependence of angiogenesis and chronic inflammation." *FASEB J*, vol. 11, no. 6, pp. 457-65, 1997. View at: [Publisher Site](#) | [PubMed](#)
- [7] Matthijs L Janssen, Mirjam J G van Manen, Sander E Cretier, et al. "Pneumothorax in patients with prior or current COVID-19 pneumoniae." *Respir Med Case Rep*, vol. 31, pp. 101187, 2020. View at: [Publisher Site](#) | [PubMed](#)
- [8] T Muraguchi, K Tsukioka, S Hirata, et al. "Spontaneous hemopneumothorax with aberrant vessels found to be the source of bleeding: Report of two cases." *Surg Today*, vol. 23, no. 12, pp. 1119-1123, 1993. View at: [Publisher Site](#) | [PubMed](#)