Case Report

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

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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 noted small and superficial lung laceration (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.

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 5). 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.

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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.
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 required 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 haematoma. 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 alveolus. Although this pathology is well described in chronic obstructive airway disease and severe acute respiratory syndrome coronavirus 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