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Epidural Extension of Infected Chest Wall Haematoma and Empyema Causing Spinal Cord Compression

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We report a case of thoracic epidural extension of an infected extra-pleural and chest wall haematoma with evidence of spinal cord compression and signs of cauda equina. Emergency spinal cord decompression with laminectomy followed by thoracotomy was performed.

Keywords Thoracic injuries • Chest injuries • Empyema • Epidural abscess • Spinal cord compression

Case Report

A 44 year-old male farmer presented with chest pain, fever, urinary retention, faecal incontinence and sudden onset bilateral lower limb paralysis 10 days after being kicked in the left chest by a cow. He had presented on four previous occasions to the regional hospital with left-sided chest pain and a worsening swelling in the left chest wall. Incision and drainage of the haematoma released pus that cultured positive for *Staphylococcus aureus* (*S. aureus*) that was positive for Panton-Valentine Leukocidin toxin genes. Clindamycin and flucloxacillin to which the organism was sensitive were commenced. There was no history of back pain prior to or following the trauma.

His past medical history included being on a methadone program for previous intravenous drug use and hepatitis C exposure with negative viral load.

Laboratory investigations: Haemoglobin of 125 g/dL, white cell count of 25.2×10^9/L, segmented neutrophils 22.9×10^9/L and C-reactive protein (CRP) was 418.

Lung fields were clear on initial chest radiographs but the patient subsequently developed pleural collections in left middle and lower zones. Initial chest computed tomography (CT) three days prior revealed a left chest wall haematoma with a small left extra-pleural haematoma and left lower lobe atelectasis with no pneumothorax, pleural effusion or diaphragmatic disruption. Incidental bilateral L5 spondylysis with minimal spondylolisthesis were also noted. A further repeat chest CT was performed on admission. (Figs. 1 and 2) Magnetic resonance imaging of the chest (Figs. 3–6) confirmed left chest wall collections and the extra-pleural collection tracking into the epidural space with epidural abscess centred around T5 vertebral body and extension to T4 and T6 with marrow changes within T6 vertebral body and pressure effect on the cord.

Emergent surgery was carried out. The neurosurgery team performed a decompressive T4–T6 laminectomy with

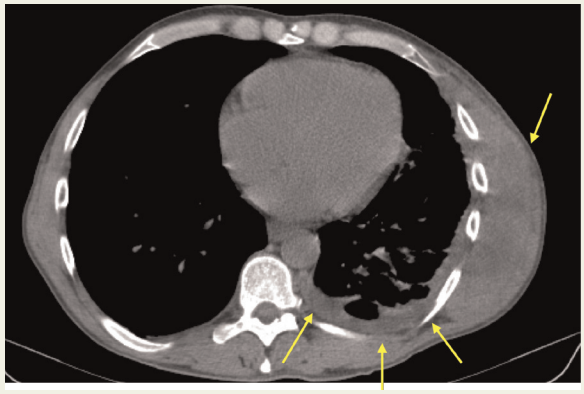

Figure 1 Initial non-contrast CT showing haematoma along chest wall with empyema.

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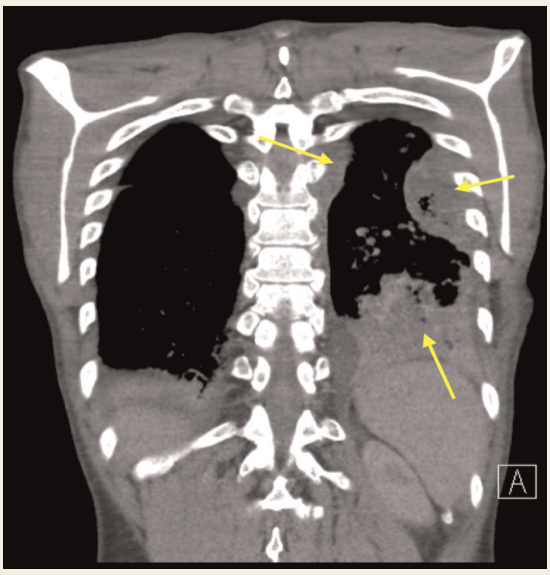

Figure 2 Post contrast CT showing loculated subpleural, collection extending along the rib with paravertebral collection.

evacuation of pus found in the posterior paravertebral muscle plane and around the spinal cord with inflammatory changes noted around the dura. This was immediately followed by the cardiothoracic surgery team performing a left postero-lateral thoracotomy through the 5th inter-costal space draining a large amount of pus from the left chest wall abscess and empyema. Four under-water seal drains were inserted: apical, anterior basal, posterior basal and beneath the 5th rib in the left thoracotomy wound. A small laceration in the underlying lung parenchyma had occurred due to a fractured rib. The pleura was opened, serous fluid was aspirated and the pleural space and extra-thoracic tissues were washed with copious quantities of normal saline.

Anal sphincter tone was assessed post-operatively and found to be flaccid. The patient had no bowel control immediately post-operation but this improved over time. An in-dwelling catheter was retained to manage urinary retention. Bladder re-training was initiated by urinary catheter 2-hourly clamping. The power in his legs gradually returned with active physiotherapy input and he was able to slowly weight-bear and walk with assistance. Chest tubes were gradually removed.

A post-operative transthoracic echocardiogram was performed in view of long-standing untreated staphylococcal infection with findings of a possible small lesion on the anterior mitral leaflet. A transoesophageal echocardiogram confirmed the possible small vegetation on the lip of the anterior mitral valve leaflet between the lateral and middle cusps with no associated regurgitation. Left ventricular function was normal. Diagnosis of definite vegetation could not be confirmed. As the patient was clinically improving and was continuing on antibiotics, it was recommended that an interval transoesophageal echocardiogram be performed. The patient made an uncomplicated early recovery from surgery.

Discussion

The reported incidence of post-traumatic empyema varies between 2% and 25% [1]. Development of empyema occurred in our patient due to the rib fractures and subsequent

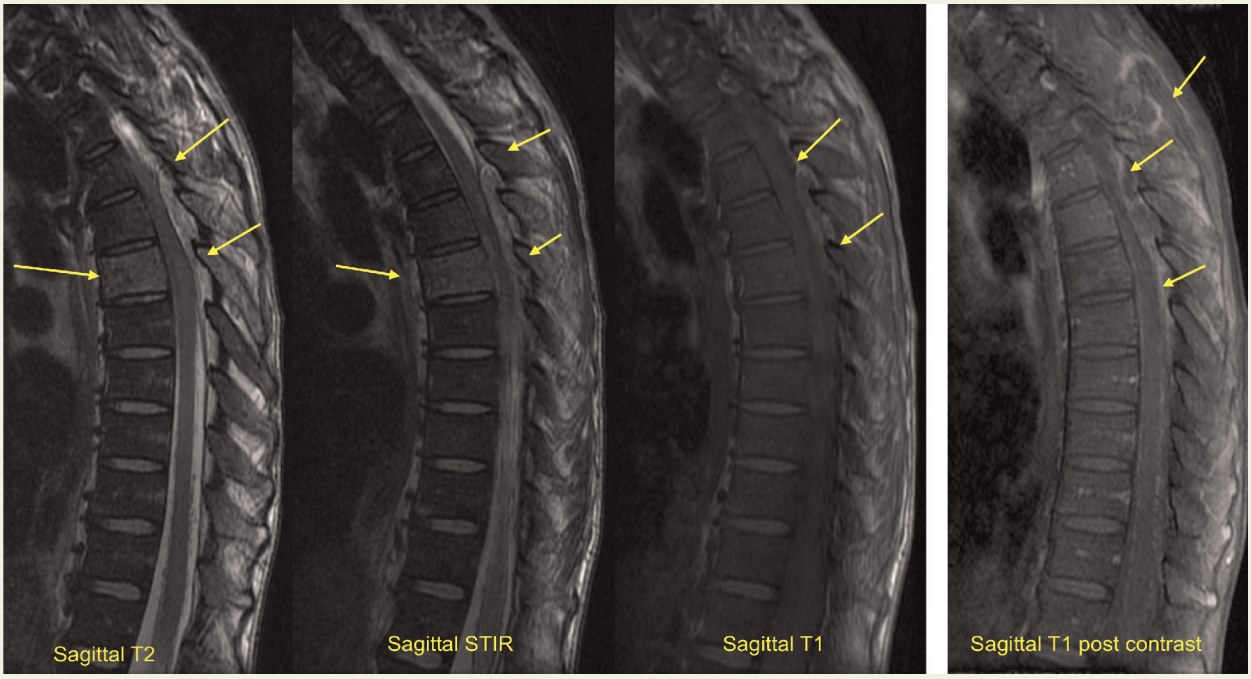

Figure 3 MRI images showing epidural collection with pressure effect on mid-thoracic cord and marrow changes on T6 vertebrae.