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Case Report

Necrotising soft tissue infection of chest wall secondary to rib fractures

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ABSTRACT

Necrotising soft tissue infection (NSTI) is a surgical emergency. We hereby present a rare case with NSTI of the chest wall secondary to rib fractures without any intra pulmonary pathology leading to a life-threatening surgical condition.

Keywords: Necrotising soft tissue infection, Rib fractures

INTRODUCTION

Necrotising soft tissue infections (NSTIs) are a challenging surgical condition requiring prompt diagnosis and early surgical intervention. There is enough evidence in literature to suggest polymicrobial infections as one of the leading contributors to this condition1.However there is minimum information on monomicrobial *Staphylococcus aureus* species induced chest wall NSTI's.

CASE REPORT

47-year-old male presented to the emergency department with right lower chest wall pain and bruising in the setting of fall from his wheelchair. He did present 7 days ago to a regional hospital following the fall, however decided to discharge against medical advice.

On presentation to our hospital, he was hemodynamically stable, managing his own airway. On palpation, there was tenderness along right lower chest wall with erythema and a soft abdomen. Blood picture was suggestive of raised white cell count to 17, glucose to 30 and mildly elevated liver enzymes with normal bilirubin and renal function tests.

X-ray chest was suggestive of no haemo or pneumothorax with right sided lower rib fractures with minimal subcutaneous emphysema.

His past medical history was suggestive of type I diabetes mellitus, active Intravenous drug abuse, heavy smoking, bipolar disorder with morbid obesity and multiple admissions with methicillin sensitive *Staphylococcus* septicaemia (MSSA), with a negative trans thoracic and trans oesophageal echocardiogram. He was wheelchair bound secondary to previous below knee and elbow amputation due to septicaemia from Intravenous drug abuse.

Given the medical complexity and low burden of his chest wall injury he was admitted under a physician for optimisation of various comorbidities.

24 hours into the admission, the erythema on his flank had progressed with a rise in the white cell count to 19.5 and C-reactive protein to 300 (Figure 1). Computed tomography (CT) scan of the chest and abdomen was suggestive of off ended lower rib fractures with gas locules in a hematoma measuring 13×5 cm (Figure 2).

We organised an urgent theatre with presumed diagnosis of necrotising soft tissue infection. Intraoperatively there was necrotic subcutaneous and muscle tissue which was debrided until the off ended rib fractures were encountered and healthy bleeding tissue was reached (Figure 3). Histopathology of the muscle was suggestive of necrosis with microbiology suggestive of *Staphylococcus aureus* species.

During in hospital stay the patient underwent multiple debridement's, wash out in theatre with negative pressure dressing application and Infectious disease specialist input for antimicrobial regimen. He was ultimately discharged on day 10 with a healing wound on oral antibiotics.

Figure 1: Right flank erythema, 24 hours into the admission.

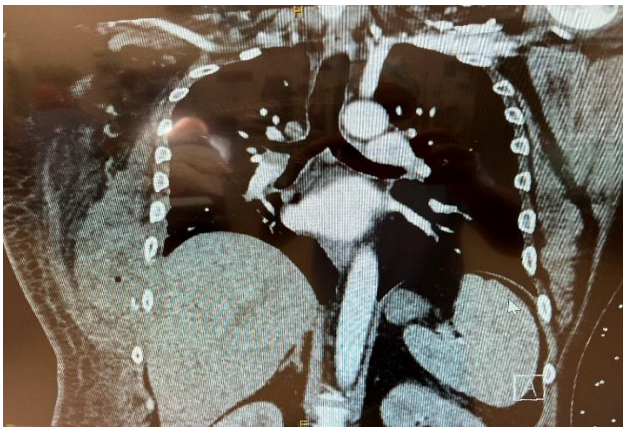

Figure 2: CT scan of the chest and abdomen was suggestive of off ended lower rib fractures with gas locules in a hematoma measuring 13×5 cm.

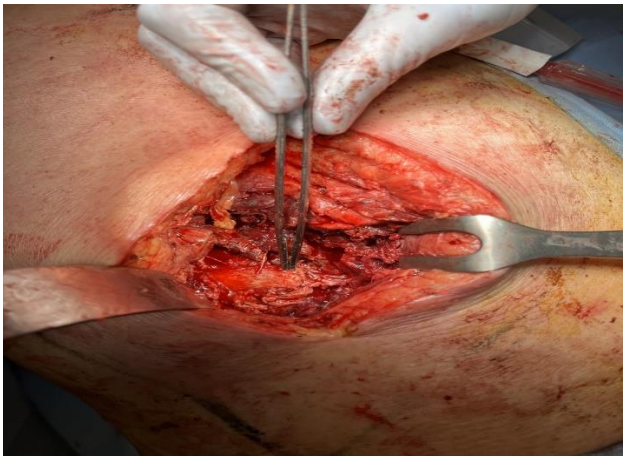

Figure 3: Intraoperative picture of debridement with extension to rib fractures and healthy tissues.

DISCUSSION

Many classifications of necrotising soft-tissue infections have been described, either depending on the anatomical location of the infection (e.g., cervicofacial, abdominoperineal and extremity) the population involved (e.g., children, patients with neutropenia, diabetes), or the causative organisms (polymicrobial/monomicrobial).[5-8]

This is a case of monomicrobial, *Staphylococcus aureus* species induced necrotising soft tissue infection of chest wall in the absence of blood stream infection. This is a rare occurrence as most infections are *Streptococcus* species *i*nduced when monomicrobial or are associated with polymicrobial organisms and positive blood cultures.[7,8] Literature on chest wall NSTI indicates either an intervention such as chest tube placement for intra thoracic pathology or diseases of lung parenchyma such as empyema or pneumonia.[9] None of these were detected in this case.

CONCLUSION

Necrotising soft tissue infection in a patient with multiple comorbidities, and sepsis upon presentation have previously been linked to increased mortality.[1,2] Although polymicrobial infestation is common, this is one of the few cases of chest wall NSTI with monomicrobial *Staphylococcus aureus* species as an aetiology with no intra thoracic pathology. Prompt recognition and surgical intervention led to a positive outcome.[3]

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