A Spontaneous Massive Pleural Effusion

Corresponding Author:
Dr. Kevin W Ongeti,
Lecturer, University Of Nairobi, Box 30197 00100 Nairobi, 254 - Kenya

Submitting Author:
Dr. Kevin W Ongeti,
Lecturer, University Of Nairobi, Box 30197 00100 Nairobi, 254 - Kenya

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Author(s): Ongeti K W

Abstract

A 62 year-old male presented with a progressing three week history of respiratory distress, tachypnoea, right sided chest stony dullness and mediastinal shift to the left. He had no clinical, laboratory or radiological evidence of pulmonary tuberculosis or malignancy and could not remember any history of chest trauma. Chest X ray revealed massive right side pleural effusion. A Computerised Tomography (CT) scan showed six consecutive rib (rib 5- 10) fractures with no callus formation. Chest tube insertion drained 4.7L of straw coloured effusion that did not recur subsequently. We suspect that multiple rib fractures irritated the pleura, resulting in a massive pleural effusion. A review of the literature indicates this to be a rare finding.

Key words: Rib fractures, Pleural effusion.

Introduction

Exudative pleural effusions often present a diagnostic challenge (Sahn, 1988). The most frequent causes are tuberculosis (TB), malignancy, paramalignant effusion, pneumonia, empyema and general infection with only a few cases being related to trauma (Atusi, 1986; Kushawaha et al., 2008; Krenke et al., 2009). Using a systematic approach based on the patient's history, physical examination, routine laboratory studies, and chest roentgenograms, the clinician will accurately establish the presence and location of pleural effusion in the majority of cases (Jay, 1985). We present a case of a massive pleural effusion resulting from unnoticed rib fractures that constituted a diagnostic challenge.

Case Report(s)

Patient TM, a 62 year old male came to our hospital on 5th September 2009 with complains of chest pain, cough and difficulty in breathing for three weeks. He was a known hypertensive, drug compliant and controlled. Prior to admission he had sought help from two other hospitals with the same problem. He had been consistently treated using co-amoxiclav antibiotics. He was not a smoker and had never been treated for pulmonary tuberculosis. There was no history of chest trauma. He was dehydrated and had reduced breath sounds on the right lung fields with stony dullness. Other systems were normal. The chest radiograph showed a right sided pleural effusion. He had an Erythrocyte sedimentation rate (ESR) of 4mm/hr, the full haemogram a mild elevation of WBC at 11 x 109/L with a normal peripheral blood film. The electrocardiogram (ECG), electrolytes, creatinine and urea were normal. Was started on antituberculosis drugs and continued on coamoxiclav. The antituberculosis drugs were stopped two days later when all sputum samples were negative for AAFB. The patient was discharge three days later to be readmitted two weeks later in severe respiratory distress, tachypnea, right sided stony dullness with the mediastinum displaced to the left. The repeat chest radiograph showed a massive right sided pleural effusion obliterating the right lung field. An intercostals chest drainage tube was inserted. It drained 4.7L of straw coloured pleural fluid in a single instance. The fluid had 6.3mmol/L glucose, microprotein of > 400mg/dL, 2-3 pus cells, 5-10 red blood cells, there were no bacteria on gram stain, the Ziehl Nielsen (ZN) for AAFB was negative. The repeat ESR was 46mm/hr. The white blood cells were elevated at 14 x 109 cells/L.

A chest and abdominal CT scans were done with IV and Oral contrast after the pleural fluid was drained. The abdominal region was normal. There was residual right pleural effusion with the chest tube insitu. The right lung had partial atelectatic changes. The pleura didn’t have any significant thickening neither did it show any nodules or septations. The mediastinum tracheobronchial tree, hilar regions and left lung were normal. There were no mass lesions or adenopathy in the chest. Six sites of mildly displaced linear fractures were noted on the ribs on the right side. There were no fractures on the left. The fractures had mild sclerosis without callus formation. The thoracic and lumbar spines were normal. There was no evidence of a neoplastic cause of the pleural effusion.

The patient was followed up a month after the chest drain had been removed. He still has a small pleural effusion on the same side

Discussions and Conclusion

Observations from this patient suggest that the effusion was related to irritation by the rib fractures.
Pertinent observations of the present case in support of the suggestion, however, are that the CT scan confirmed the fracture ribs; the effusion was exudative and lymphocytic in nature. What is surprising is that this patient doesn’t recall having any chest trauma. Our patient didn’t have a hemothorax owing to the straw coloured fluid that was drained as well as the few RBCs in the pleural aspirate. The fluid equally took about three months to accumulate. A possible explanation is that the trauma had occurred much earlier and he could not just remember. Indeed in literature, pleural effusion has been diagnosed 3 years after rib fracture (Watanabe et al., 1999). In cases of delayed pleural effusion, patients could have recurrent lymphocytic exudative effusion. This rare entity is probably related to sub pleural trauma, and may recur. As in the present study, it can be treated with pleural drainage7. The cause of the rib fracture is classified as benign because the bones didn’t have any malignant changes.

In conclusion multiple rib fractures should be considered as rare causes of exudative pleural effusions especially in the elderly.

References

Illustrations

Illustration 1

Figure 1

The initial chest radiograph with a mild right sided pleural effusion
Illustration 2

Figure 2

The second radiograph with a massive right sided pleural effusion with mediastinal shift to the left.
Illustration 3

A Chest CT scan slide showing a right sided rib fracture without callus
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