

Case Report

Cough fracture: stress on the ribs

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ABSTRACT

Cough can be associated with many complications. In this article, we present an 18 year female presenting with cough related stress fracture of the ninth rib. The purpose of this paper is to call attention to an infrequent but possibly often unrecognized cause of pain in the chest of sudden onset and resembling dry pleurisy in its symptoms.

Keywords: Cough fracture, Ribs, Chest pain

INTRODUCTION

Violent or sustained coughing can be associated with many complications. The most frequent and best documented complications are rib fractures. The purpose of this paper is to call attention to an infrequent but possibly often unrecognized cause of pain in the chest of sudden onset and resembling dry pleurisy in its symptoms.

CASE REPORT

An 18 years female presented to our out-patient department with cough and expectoration of three weeks duration associated with low grade fever and one episode of hemoptysis. She also gave history of left upper abdomen pain of three days duration which was worse on coughing and on deep breathing. She gave no history of vomiting, hematemesis, jaundice, abdomen distension, altered bowel habits and trauma. She gave family history of pulmonary tuberculosis to her grandfather. On examination she was tachypnoeic with tachycardia. Abdomen examination showed tenderness over left hypochondrium with guarding extending over the lower

ribs. Clinical diagnosis of left lung abscess or left subdiaphragmatic abscess was made and was investigated. Plain radiography showed fracture 9th rib over the left side with normal lung fields (Figure 1) and ultrasound abdomen was normal. After ruling out pulmonary tuberculosis, she was treated for lower respiratory infection with antibiotics and for rib fracture with analgesics. At the time of discharge the patient was well.



Figure 1: X-ray chest showing fracture left 9th rib.

DISCUSSION

Since Graves (1833) described a case of cough fracture, more than 130 have been reported. Violent or sustained coughing can be associated with many complications. The most frequent and best documented complications are rib fractures.¹

Cramer (1943) suggested that the upper five ribs are unlikely to fracture from cough because they are shorter and are supported posteriorly by the scapular musculature. Typical locations for rib fractures include the fifth through the ninth rib at the lateral aspect of the rib cage. Opposing muscular forces between the serratus anterior and external oblique muscles in the middle of the rib at the axillary line cause these fractures.² Other cough induced rib fractures are caused by a complex interplay between inspiratory and expiratory muscles.

During forced respiratory movements, the abdominal muscles contract in such a way pushing the diaphragm upward and the ribs downward resulting in rib fracture and diaphragmatic rupture. Oechsli (1936) observed that these fractures occurred just in front of the origin of the serratus anterior (upper eight or nine ribs) or just behind the origin of the obliquus externus abdominis (lower eight ribs).

In many cases previously reported the patient felt a snap in the side during a vigorous bout of coughing followed by a severe pain with signs of localized tenderness, crepitus, and often even palpable bone fragments. Coughing can be associated with many complications, which includes pneumothorax,³ bleeding⁴ or even intercostal pulmonary hernia.⁵ Cough fractures of ribs have also been known to occur in elderly subjects, probably associated with increased fragility of bones associated with advancing age.

Differential diagnoses of rib fracture include abdominal muscle tear, primary pleurisy, pleuropneumonia, and fibrositis. Cough fracture could be easily diagnosed, but abdominal muscle tears are frequently missed, hence computed tomography seems to be essential for an accurate diagnosis.

Cough fracture are easily missed, because in standard X-ray views, the lateral parts of the ribs are crowded and are apt to be obscured by scatter radiation, especially when soft films are taken which are designed to show lung lesions rather than bony defects.

Therapy for sole rib fracture is conservative with treatment of the cough causing factor.

Summary

In summary, since both the diaphragm and abdominal muscles are attached to the lower ribs, opposing forces due to cough can result in a rib fracture and diaphragmatic rupture.

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