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COUGH INDUCED RIB FRACTURE

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ABSTRACT

Cough-induced rib fractures, though rare, represent an important differential diagnosis for unexplained chest pain, even in healthy individuals. These fractures typically involve ribs 5–10 due to their anatomical susceptibility and may be misdiagnosed due to non-specific symptoms. Advanced imaging, particularly CT scans, is essential for accurate diagnosis and exclusion of severe complications like pneumothorax or diaphragmatic injury. Management is usually conservative, involving rest, analgesics, and cough suppression, but surgical intervention may be required for complications. Preventive strategies, such as smoking cessation and osteoporosis management, are critical. Timely recognition and multidisciplinary care can improve outcomes and prevent serious complications.

INTRODUCTION

Coughing is an important protective response of the body. Rib fractures are commonly associated with trauma.[1] However, spontaneous rib fractures secondary to repetitive or forceful mechanical stress, such as severe coughing, are uncommon. They represent an unusual but significant cause of chest pain that often goes unrecognized in clinical settings.[2] These fractures are frequently observed in individuals with risk factors such as osteoporosis, chronic lung conditions, advanced age, structural deformities like scoliosis, or underlying respiratory conditions.[3] Misdiagnosis of this condition can delay treatment and lead to complications, including pneumothorax, subcutaneous emphysema, or even diaphragmatic injury. In rare instances, healthy individuals with no such risk factors may also experience spontaneous rib fractures.[4] We present a rare case of spontaneous rib fracture in an adult male, which was managed conservatively.

CASE PRESENTATION

A 35-year-old male presented to the surgery outpatient department with complaints of severe pain localized to the right lower side of the chest for 2 days. The pain intensified with deep inspiration, coughing, and movement. He denied any recent trauma or strenuous activities. His medical history was unremarkable, with no known history of osteoporosis, respiratory illness, or chronic cough. He was a non-smoker and had no history of previous fractures. The patient reported experiencing a recent upper respiratory infection characterized by a persistent cough. During a particularly intense bout of coughing, he recalled feeling a sharp, popping sensation in the right chest, followed by the onset of pain.

On physical examination, the patient was afebrile with stable vital signs. There was localized tenderness to palpation over the mid-lateral aspect of the right chest, specifically in the area of the 8th rib, along with crepitation over it. Chest auscultation was clear, with no evidence of respiratory distress. No signs of bruising, swelling, or deformity were noted. Initial chest radiography revealed a normal study with no identified bony injury (Figure 1). Since the patient did not experience relief from pain and the diagnosis remained uncertain, a computed tomography (CT) scan of the chest was performed, which revealed a linear fracture in the right 8th rib in its lateral aspect (Figure 2). A bone mineral density (BMD) test was conducted, revealing normal bone density, thereby ruling out underlying osteoporosis.

Based on the patient's history, physical examination, and radiographic findings, a diagnosis of spontaneous rib fracture secondary to coughing was made. The patient was treated conservatively with oral analgesics (ketorolac) for pain management and was advised to avoid strenuous activities. At a 3-week follow-up, the patient reported a significant reduction in pain and was able to resume normal activities without discomfort. A follow-up chest X-ray was not performed, as his symptoms had resolved.

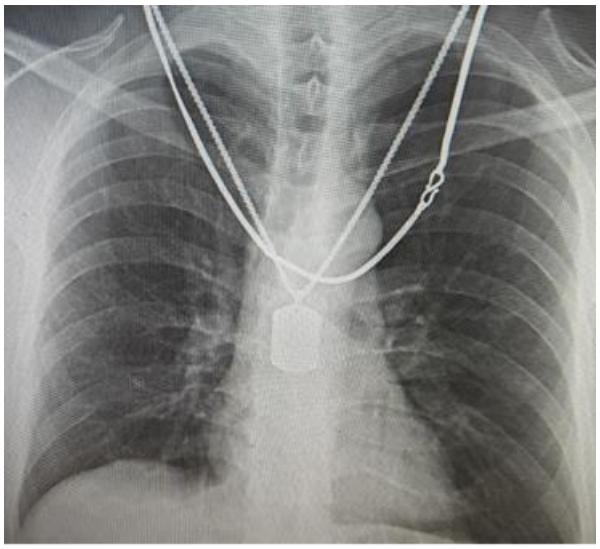

Figure 1: Chest Xray.

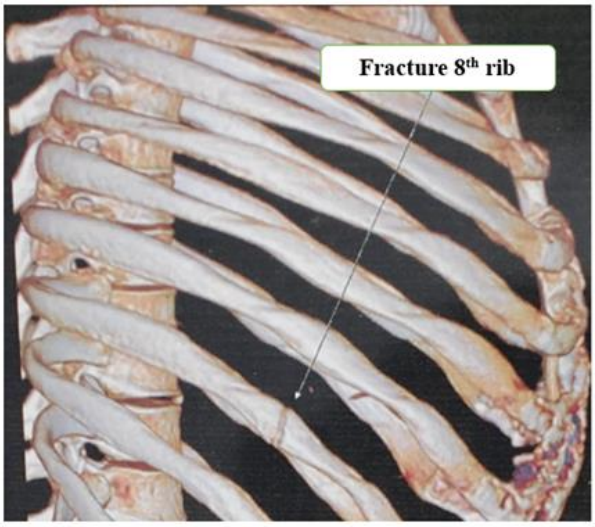

Figure 2: CT scan showing a linear fracture in the right 8th rib in its lateral aspect.

DISCUSSION

Cough-induced rib fractures, though rare, pose a significant diagnostic challenge due to their non-specific symptoms and potential complications.[2] Severe coughing episodes generate substantial intrathoracic pressure, which, when combined with structural vulnerabilities, can result in rib fractures. The lateral portions of ribs 5–10 is more susceptible to these fractures due to their exposure to shear forces and lack of support.[5-6] The risk of complications correlates with the number and severity of rib fractures, with more fractures leading to higher risks of severe complications, such as pneumonia.[7]

Advanced imaging modalities, particularly CT scans, are critical for identifying subtle or complex fractures and associated complications, such as pneumothorax, subcutaneous emphysema, or diaphragmatic injuries. In cases where fractures mimic more severe conditions, such as myocardial infarction or pulmonary embolism, accurate imaging is indispensable for differential diagnosis.[8]

Management strategies depend on the severity of the injury and the presence of complications. Conservative approaches, including rest, analgesics, and cough suppression, are sufficient for most cases. However, complications such as non-union fractures, diaphragmatic rupture, or empyema may require surgical intervention.[9] Multidisciplinary care is essential in managing severe cases, especially those involving multi-organ damage or chronic pain.[10]

Preventive strategies, such as smoking cessation, osteoporosis management, and vaccination against respiratory infections, are crucial to reducing the risk of such fractures.[11] This case highlights the importance of recognizing cough-induced rib fractures in patients presenting with unexplained chest pain, even in the absence of predisposing factors.

CONCLUSION

Cough-induced rib fractures are rare but significant injuries that require prompt recognition and management. They should be considered in the differential diagnosis of chest pain, even in otherwise healthy individuals. Advanced imaging is crucial for accurate diagnosis, while treatment ranges from conservative care to surgical intervention in cases with complications. Awareness of risk factors, preventive measures, and multidisciplinary approaches is essential to improving outcomes and preventing life-threatening complications in susceptible individuals.

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