

Rib Fracture due to Severe Cough caused by Pertussis Infection in an Adult

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Abstract A 67 year old man presented with right sided flank pain, flu like symptoms and cough. Initial chest x-ray was unremarkable. Serology was positive for pertussis and a repeat chest x-ray for ribs showed a rib fracture. He received supportive treatment with improvement of his symptoms.

Keywords: *rib fracture, pertussis*

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1. Introduction

Pertussis, also known as whooping cough, is a highly contagious respiratory disease. It is caused by the bacterium *Bordetella pertussis* [1]. It is a very common cause of infection in the pediatric age group but is very rare in the adult population and often presents as a severe infection.

Pertussis can cause violent coughing which is associated with a host of complications including syncope, rupture of subconjunctival nasal and anal veins, pneumomediastinum [2], pneumothorax, rupture of muscles, herniation of lung through intercostal spaces [3] and fracture of ribs [4]. We report a case of rib fracture due to severe coughing caused by pertussis infection.

2. Case

A 67 year old gentleman presented with right sided flank pain for 3 days. He had developed symptoms of upper respiratory tract infection followed by progressive cough with a mild whooping quality. He developed pain in the right flank after an episode of violent coughing and was aggravated on inspiration and lying on the affected side. He denied any trauma. On examination, there was tenderness in the right flank with no visible defect.

Laboratory data was significant for elevated monocyte level and positive pertussis serology. Initial chest x-ray was unremarkable. CT scan of chest showed changes in left lower lobe with some volume loss and mild aortic aneurysmal dilatation. CT scan of abdomen showed left sided rib deformities and elevation of the left hemi-diaphragm compatible with prior lung surgery, layering gall bladder calculi and small calcifications with in renal hila likely vascular in nature. Due to persistent symptoms, a repeat chest x-ray for ribs was ordered,

which showed a subtle non displaced fracture of the right 12th rib, which was better seen on the review of chest CT scan. Patient was started on azithromycin and analgesia and was advised bed rest. He showed a favorable response and was later discharged.

3. Discussion

Two mechanisms have been proposed to explain cough induced rib fracture [5]. Firstly, strong bending force on the middle third of the rib might result in tiny cracks and if repeated bending forces are exerted, such as during chronic cough, a fracture will eventually result [4]. Secondly, the shearing forces generated by the antagonistic serratus anterior and external oblique muscles, which interdigitate on the middle third of the rib, the opposite forces exerted by them on the rib during coughing could gradually establish a rib fracture [4]. Treatment of non-displaced rib fracture is supportive with rest, physical therapy and analgesia.

4. Conclusion

Cough induced rib fracture is rare with severe cough due to pertussis infection. Diagnosis is often missed on initial examination and investigation, therefore it should be carefully investigated and should always be ruled out in a patient with severe coughing and chest or flank pain.

References

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