Multiple exostoses of rib misdiagnosed as a case of pneumonia
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Section: Musculoskeletal system
Area of Interest: Bones Musculoskeletal bone
Procedure: Diagnostic procedure
Imaging Technique: Conventional radiography
Imaging Technique: CT
Imaging Technique: Ultrasound
Special Focus: Neoplasia Case Type: Clinical Cases
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Patient: 2 years, male

Clinical History:
A 2-year-old male child presented to our paediatrics department with a history of cough with expectoration and fever for 2 days. He was diagnosed as a case of pneumonia in a peripheral hospital on the basis of a chest X-ray and was started on antibiotics.

Imaging Findings:
X-ray (Fig.1) findings showed a radio-opaque lesion in the mid lung zone. Suspecting it to be a tubercular consolidation owing to the prevalence of TB in India, a thoracic CT scan was advised which showed multiple bony outgrowths from the 4th and 8th ribs of the left and 7th and 11th ribs of the right side (Fig.2, 3). The outgrowths were seen to arise from the epiphysiometaphysial region of the inner side of the rib directed away from the costochondral joint. They were seen to communicate with the medullary cavity. Cartilage cap was demonstrated (Fig. 2b). Upon ultrasonography correlation, irregular bony lesions with hypoechoic cartilage cap were demonstrated (Fig. 4). A final diagnosis of multiple osteochondromas was given. The patient did not have any pain or disfigurement owing to the inward direction of the exostoses.

Discussion:
Osteochondromas are benign tumours of bone which are thought to be developmental anomalies by some. These develop from a separated portion of epiphysis from main epiphysis. These can be solitary or multiple. Multiple exostoses are often nonsporadic and are a part of hereditary multiple exostoses (aka diaphyseal aclasis) or Trevor disease.
Patients are usually diagnosed in adolescence. Most are asymptomatic while presenting with structural deformity. Imaging in most cases confirms the diagnosis. Exostoses of the rib are very rare with an incidence of 0.002% [1, 2]. Unusually rib exostoses can present as a case of haemothorax or pneumothorax, but these types of presentations are exceedingly rare [3, 5].
Osteochondromas can be sessile or pedunculated, mostly arising from the metaphyseal region as bony projections directed away from the joint. X-ray often shows the bony outgrowth with rings and arcs calcification. Cartilage cap is often difficult to be visualised on a plain radiograph. Ultrasonography shows thin hypoechoic cartilage cap over the
bone. MDCT often shows findings of plain radiograph, but better delineates the cartilage cap and medullary continuity. MRI is the imaging modality of choice for cartilage cap thickness, thus assessing the malignant transformation [4]. Cartilage cap appears low signal on T1 and high signal on T2 weighted images [2]. A cartilage cap of more than 1.5 cm thickness is suspicious of malignancy. Most of the osteochondromas cease to grow after skeletal maturity, not needing any treatment. Surgical excision is indicated for cosmetic reasons. In case of malignant transformation, wide local excision often suffices. Rib exostoses are a very rare condition which are often treated conservatively unless associated with malignant transformations [2].

**Differential Diagnosis List:** Hereditary multiple exostoses, Eosinophilic granuloma, Fibrous dysplasia, Enchondroma, Chondrosarcoma

**Final Diagnosis:** Hereditary multiple exostoses

**References:**


Description: Chest radiograph showing a radio-opaque lesion in left mid lung zone. Origin: Dept of Radiodiagnosis, SCB Medical College, Cuttack, Odisha, India
Description: CT Image showing a bony outgrowth arising from the left 4th rib suggesting the appearance of osteochondroma with an isodense cap over it suggesting a thin cartilage cap. Origin: Dept of Radiodiagnosis, SCB Medical College, Cuttack, Odisha, India
**Description:** CT image showing a bony outgrowth arising from left 4th rib suggesting the appearance of osteochondroma with an isodense cap over it suggesting a thin cartilage cap. **Origin:**
Dept of Radiodiagnosis, SCB Medical College, Cuttack, Odisha, India
Description: VR image of chest showing multiple osteochondromas arising from 4th and 7th rib on left side and 7th and 11th rib on right side. Origin: Dept of Radiodiagnosis, SCB Medical College, Cuttack, Odisha, India
Description: Ultrasound image showing a hypoechoic cap over the bone surface (arrow). Origin: Dept of Radiodiagnosis, SCB Medical College, Cuttack, Odisha, India