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Case Report

Mimicking rib osteochondroma as pulmonary nodule in a pediatric patient: A case report from Damascus, Syria ☆

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ABSTRACT

Osteochondromas, the most frequent type of bone tumor, develop from the metaphysis region of bones. Osteochondroma often occurs in bones, however, it is rare when it comes to rib tumors. It is often asymptomatic and observed incidentally.

We present a case of a 14-year-old male patient who had been experiencing cough and mild fever for approximately a week. We requested a CXR PA and LAT. It showed a pulmonary nodule measuring 1.5 cm in diameter in the upper segment of the left lower lobe.

Taking into account the unclear nature of the diagnosis, we requested CT scan with contrast of the chest to obtain a better view. It showed:

The nodule visualized on the CXR corresponded to a posteriorly directed, well-defined lesion arising from the costal cartilage of the third left rib, measuring 1.2 × 1.3 × 1.1 cm, likely representing an osteochondroma.

The case we discussed highlights a rib osteochondroma that initially seemed like a pulmonary nodule on an X-ray, pointing out the importance of using CT scans for accurate diagnosis in such cases, and reminding us to consider osteochondroma when we see similar symptoms and to regularly check the tumor with medical imaging after it's been confirmed by a pathological test.

Introduction

Osteochondroma classifies as one of the most common benign bone tumors and represents 20 to 50% of all benign neoplasms, furthermore, males are more likely to develop this tumor [1].

Osteochondroma may emerge in 1 of the 2 clinical scenarios either as a solitary tumor or as a part of hereditary multiple exostoses [1].

☆ Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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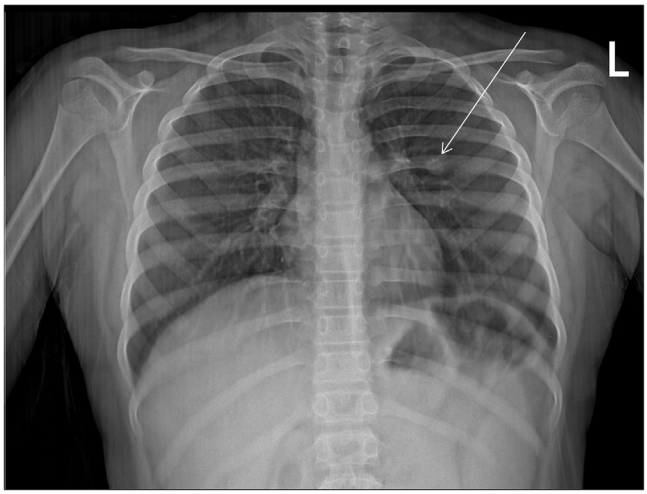

Fig. 1 – The postoperative chest X-ray shows a Mimicking Rib Osteochondroma as Pulmonary Nodule.

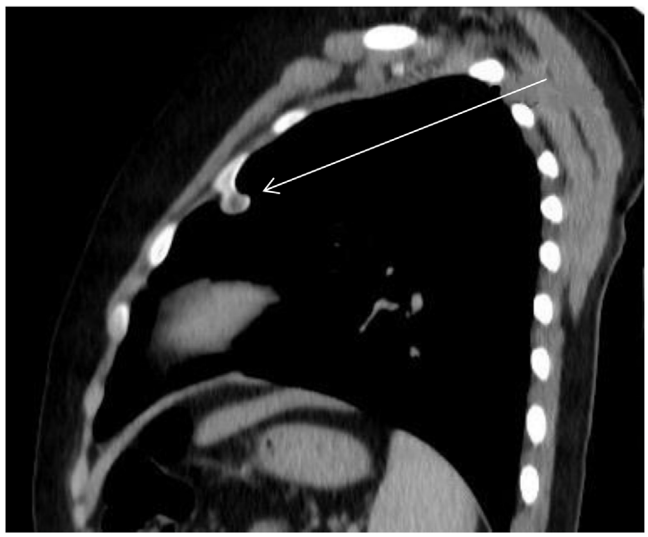

Fig. 2 – The postoperative contrast-enhanced CT scan (sagittal view) shows the lesion.

The ends of long bones، where growth plates occur, are the most commonly affected sites, while represents rare tumor of the ribs and ranges from 2% to 8% [2].

In most cases it is asymptomatic, but it may be diagnosed by many complications depending on its site and effect on the adjacent tissues [3,4].

In this case, we present a case of a 14-year-old child who had a cough and a fever for a week and incidentally discovered by radiological investigation, a rare position of osteochondroma on the left third rib.

Case presentation

We present a case of a 14-year-old male patient who had been experiencing cough and mild fever for approximately a week. For more details, we requested a CXR PA and LAT.

The findings included: (Fig. 1)

(a) A pulmonary nodule measuring 1.5 cm in diameter in the upper segment of the left lower lobe.
(b) Mild increase in bronchovascular markings in both lungs, possibly indicative of bronchitis.
(c) The rest of the lung fields appeared clear without any focal or cystic densities; the lungs appeared normal in shape, size, and position; the heart shadow was within normal limits; the diaphragm had regular margins and appeared normal on both sides; the costophrenic angles were free on both sides; the ribs and other bones imaged were within normal limits; and no obvious mass lesions or calcifications were seen in the soft tissues.

Given the uncertainty of the diagnosis, we requested a multi-slice CT scan with contrast of the chest to obtain a better view. The CT scan showed: (Figs. 2 and 3)

(a) No pulmonary masses, nodules, or densities were observed; no suspicious mediastinal lymphadenopathy was present; the bronchi and bronchial branches appeared patent; the heart and major vessels showed normal caliber and lucency; and there was no evidence of pleural effusion, pericardial effusion, or pneumothorax. The bones imaged appeared normal.
(b) The nodule visualized on the CXR corresponded to a posteriorly directed, well-defined lesion arising from the costal cartilage of the third left rib, measuring 1.2 × 1.3 × 1.1 cm, likely representing an osteochondroma, exerting a slight impression on the adjacent lung parenchyma.

Discussion

Osteochondroma is the most common benign bone tumor and represents 20% to 50% of all benign tumors, furthermore, males are more likely to develop this tumor in comparison with females [1]. It may represent as a single tumor or be posed as a group falling into multiple hereditary exostosis syndrome [1,2].

It develops during childhood and long bone ends form common sites of this tumor, especially around the knee and usually Lower limb has 50% of all cases [5]. The most common position in the lower limp is the femur then the tibia, furthermore, there are less common locations such as feet, pelvis, spine, upper limb, and scapula [5]. while ribs are a rare demonstration but can have serious complications including hemothorax, pneumothorax, diaphragmatic rupture, recurrent empyema, vascular and nerve impingement [3–5].

It may appear as a mass on the chest wall or detect a coincidence during radiological investigations [6].

In our case, a 14-year-old child had a cough and fever for a week, and the CXR showed up a nodule at the upper segments of the lower left lung lope and by linking symptoms with radial presence, they are consistent with bronchitis.

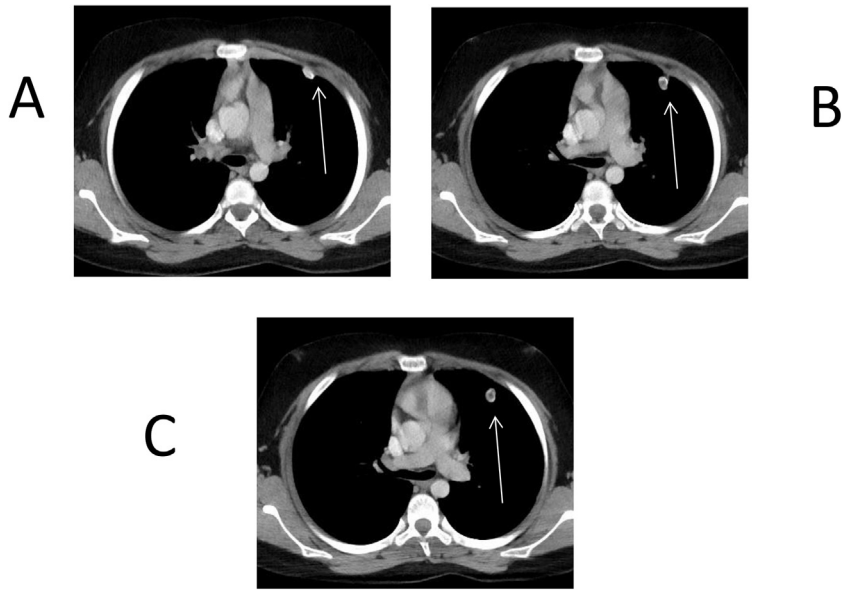

Fig. 3 – The postoperative contrast-enhanced CT scan (axial view) shows the lesion.

For more precious details, the CT shows that the nodule visible on the CXR images corresponds to a lesion on the costal cartilage of the third left rib and with the radiological features he diagnosed with a rare position of osteochondroma. "The diagnostic criteria as per the 5th edition of the WHO classification for soft tissue and bone tumors:

Cartilaginous cap <2 cm Growth-like architecture (in children) or extensive calcification as age increases Underlying stalk with medullary and cortical continuation with underlying bone [7].

It is usually asymptomatic and left to observe, while the decision of surgical interference is taken if one of the following cases appears: The suspicion is transformed into malignancy, causing complications such as hemothorax, pneumothorax and others, and a significant increase in volume and pressure on the adjacent tissues [3,4,8].

Malignant transformation is rare in solitary osteochondromas (~1%), but more common (5%-25%) in hereditary multiple exostoses [9].

Surgical Treatment for these tumors typically involves wide local resection with negative margins to reduce the risk of recurrence [10]. For smaller osteochondromas extending into the chest and compressing mediastinal structures, video-assisted thoracoscopy can be used for excision [4]. Larger tumors often require a more extensive approach through thoracotomy.

Conclusion

In general, osteochondromas most commonly occur in the long bones near the metaphysis but can also appear in unusual places like the ribs. These are the most common benign bone tumors found in children, with an incidence of 1 in 50,000. Often, costal osteochondromas do not cause symptoms until they grow large enough to cause pain, limit movement, or change the shape of the bone. Despite being benign, these tumors can sometimes lead to serious problems such as brachial plexopathy, hemothorax, pneumothorax, or very rarely, cancer, which means any signs of rib swelling should be carefully monitored. The case we discussed highlights a rib osteochondroma that initially seemed like a pulmonary nodule on an X-ray, pointing out the importance of using CT scans for accurate diagnosis in such cases, and reminding us to consider osteochondroma when we see similar symptoms and to regularly check the tumor with medical imaging after it's been confirmed by a pathological test.

Patient consent

Written informed consent for the publication of this case report was obtained from the parents of the patient.

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