LETTER / Thoracic

Suprascapular nerve compression due to rib osteochondroma: MR imaging features

Keywords Suprascapular nerve compression; Osteochondroma; Costal

Dear editor,

Osteochondroma is the most common benign tumor of the bone, presenting 10%—15% of all primary bone tumors. Patients may present with fracture, deformity, malignant transformation and compression of adjacent neurovascular structures, spinal cord and other organs [1]. Osteochondroma of the rib is exceedingly rare, patients may present with pleuritic chest pain, shortness of breath, bony deformities, and spinal cord compression [2,3]. However, rib osteochondroma causing peripheral nerve injury has not been reported in literature. Herein, we present one case of solitary osteochondroma arising from the right second rib, causing suprascapular nerve compression.

Case

A 40-year-old man was admitted for right shoulder pain and right upper extremity weakness present for the last 1 year. Physical examination revealed limited external rotation and abduction of right upper arm. The patient had a long history of smoking but denied any symptom of fever and malaise. Chest radiography for a possible pancoast tumor showed an expansile bony lesion with well-demarcated margins originating from right second rib, in close proximity to the right scapula (Fig. 1). A chest computed tomography (CT) for lesion delineation revealed a pedunculated bony mass arising from the anterior part of right second rib extending into the suprascapular region (Fig. 2). Magnetic resonance imaging (MRI) showed a heterogeneous osseous mass with an 8 mm-thick cartilaginous capsule, arising from the right second rib. The lesion fused with the medullary cavity of the second right rib and enlarged towards the scapula. The mass was extending to the suprascapular notch, with compression of the suprascapular nerve revealed by nerve enlargement and high-signal on fat-suppressed T2-weighted images (Fig. 3a). Atrophy in right supraspinatus and infraspinatus muscle was noted as decreased signal intensity on T1-weighted images (Fig. 3b) and increased signal intensity on fat-suppressed T2-weighted images (Fig. 3c) due to the mass (asterisk). No sign of tendinitis and tear was noted. The mass was excised with its capsule through a right posterolateral thoracotomy (Fig. 4a). Histopathological examination revealed cartilaginous cap surrounding trabecular bone consistent with a diagnosis of osteochondroma (Fig. 4b). Following surgery, shoulder pain and upper extremity weakness improved slightly.

Figure 1. Posterior-anterior chest radiography reveals a well-demarcated bony lesion (arrow) arising from the right second rib.

Figure 2. CT image, coronal reconstruction image reveals a pedunculated sclerotic bony mass (arrow) arising from the right second rib and extending into the suprascapular area.
Discussion

Osteochondromas are usually solitary, but presentation with multiple lesions as an autosomal dominant inheritance may be seen [4]. Rib osteochondromas typically appear at or near the costochondral junction and are usually asymptomatic which may cause underestimation of current incidence [5,6]. Costal osteochondroma is usually asymptomatic, but rarely pneumothorax, hemothorax and vascular compression may be observed. Although a few cases of costal osteochondroma causing spinal cord compression have been reported [5], peripheral nerve injury due to a rib osteochondroma has not been previously reported.

Although X-ray is the first and most practical tool for diagnosis of osteochondroma, CT is the preferred imaging technique to identify the bony nature of the mass. MRI is the favored examination method to determine complications such as vascular or tendon compression, malignant transformation and nerve impingement. Additionally, MRI can help determine peripheral compressive injuries caused by osteochondromas. The MRI findings of compressive nerve injury are alterations in size, signal

Figure 3. a: fat-suppressed T2-weighted axial image (TR: 2860 ms, TE: 35 ms) shows a mass (asteriks) with slightly hyperintense signal than adjacent muscle and dilated suprascapular nerve (white arrow) with increased signal intensity; b: T1-weighted image (TR: 580 ms, TE: 11 ms); c: fat-suppressed T2-weighted sagittal images (TR: 3020 ms, TE: 38 ms) reveal supraspinatus (arrowhead) and infraspinatus (white arrows) muscle atrophy as secondary signs of suprascapular nerve compression due to the mass (asterisk).

Figure 4. a: gross image of excised osteochondroma; b: pathological specimen showing cartilage cap surrounding trabecular bone (H&EX40).
and position of the affected nerve [1]. In a patient presenting with suspected suprascapular nerve compression, differential diagnosis is extensive and includes: ganglion cyst or other soft tissue lesions, trauma, injuries due to sports activities, dilated veins in the spinoglenoid notch and surgery involving the nerve region. In our patient, CT and MRI showed a lesion arising from the right second rib extending to the suprascapular notch with compression of suprascapular nerve. Due to the nerve compression, atrophy in supraspinatus and infraspinatus muscles were noted.

The possibility of a costal osteochondroma must be taken into consideration in patients presenting with suprascapular nerve compression findings.

Disclosure of interest
The authors declare that they have no conflicts of interest concerning this article.

References

A.S. Dikici a, S. Bakan a, S.G. Kandemirli a,b,*, S. Sonmez a, E. Ersen b, N. Comunoglu c, F. Kantarci a

a Istanbul University, Cerrahpasa Medical Faculty, Department of Radiology, Kocamustafapasa, 34098 Fatih/Istanbul, Turkey
b Istanbul University, Cerrahpasa Medical Faculty, Department of Thoracic Surgery, Istanbul, Turkey
c Istanbul University, Cerrahpasa Medical Faculty, Department of Pathology, Istanbul, Turkey

* Corresponding author.

E-mail address: gskandemirli@yahoo.com
(S.G. Kandemirli)

http://dx.doi.org/10.1016/j.diii.2015.05.007