Osteochondroma of the Scapula Associated with Winging and Large Bursa Formation

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Osteochondroma, scapular • Scapula winging • Bursa formation

Abstract
Objective: To report a case of scapular osteochondroma associated with pain and winging that is rarely reported in the medical literature. Case Presentation and Identification: A 19-year-old male presented with pain and winging of the right scapula. CT scan revealed an osteochondroma of the medial border of the scapula with a large bursa between the chest wall and the tumour. Excision of the tumour relieved the symptoms. Pathological study showed osteochondroma of the scapula. In a follow-up 1 year later he was free of pain with no clinical or radiological sign of recurrence. Conclusion: A case of scapular osteochondroma associated with pain and winging treated by excision and follow-up showed no sign of clinical or radiological recurrence.

Introduction
Osteochondroma is the most common benign bone tumour, representing 15% of all bone tumours as reported in the series of Pongkripetch and Sirikulchayanonta [1] and 45.3% of benign tumours according to Barbosa et al. [2]. It occurs frequently as a solitary osteocartilaginous exostosis and rarely as hereditary multiple lesions. The most common sites of occurrence are the long bones of the lower extremity (50%), usually the lower end of the femur and upper end of the tibia [3, 4]. However, involvement of the small bones of the hand and other bones occurs in 10% of cases. An incidence of 5% in the pelvis and 4% in the scapula has been reported [3].

These tumours are usually painless, but symptoms may result from complications such as mass effects that produce mechanical pressure, fracture of the bony stalk of the tumour, nerve impingement syndromes, malignant transformation of the cartilaginous cap and large bursa formation. The scapula is an uncommon site for osteochondroma and there are a few articles in the literature reporting large bursa formation due to scapular osteochondroma [5]. Since a rapid enlargement of the bursa of osteochondroma may be interpreted as a malignant transformation of the cartilaginous cap of osteochondroma, differential diagnosis of these two conditions is important [5].

Here we report a large osteochondroma arising from the medial border of the scapula in a young adult male with a large bursa between the tumour and chest associated with winging.
Case Report

A 19-year-old right-hand-dominant male presented with pain and drooping of the right shoulder of 6 months' duration, with a recent increase in the size of the mass. There was no history of trauma, and family histories were not contributory.

The patient was a healthy male with the right shoulder at a lower level than the left. A large hard bony swelling was palpable along the medial border of the right scapula. A grating sensation was felt when the arm was passively abducted. Active abduction of the shoulder was possible to 90°. There was winging of the scapula that was more prominent on active abduction. There was no neurological deficit in the upper extremities. No other bony prominences were detected elsewhere in the body.

Laboratory data were within normal limits. X-ray examination showed a large bony tumour arising from the medial border of the scapula towards the thorax. CT scan showed a mushroom-shaped exostosis measuring about 6 × 5 × 3 cm close to the medial border and attached to the ventral surface of the scapula by a small stalk (fig. 1). There was a very large bursa between the trapezius, serratus anterior and paravertebral muscles, extending medially from the spinous processes of the T4–T8 vertebrae to the mid axillary line laterally, deep to the trapezius and superficially to the paravertebral and serratus anterior muscles. Neither fuzzy margins of the cartilaginous cap nor a lucent or poorly mineralized portion within the osteochondroma were observed (fig. 2). The pre-operative diagnosis was osteochondroma of the scapula with a large bursa between the tumour and the chest.

Osteochondroma was identified between the scapula and serratus anterior muscle through an incision along the medial border of the scapula and splitting trapezius muscle. About 300 ml of clear fluid was aspirated from the bursa before removal. The tumour was excised from the ventral surface of the scapula through its base. The excised osteochondroma measured 6 × 5 × 2.5 cm and weighed 19 g. No loose body was found within the bursal sac. The bursa between trapezius, serratus anterior and paravertebral muscles was removed, but the lateral part of the bursa between the lateral scapular border and chest wall was not excised. The consistency of the bursal wall was elastic, and whitish fibrous and villous tissue covered its inner surface. The bursal wall varied considerably in thickness from 1 to 4 mm. The thickness of the cartilaginous cap of the osteochondroma was less than 1 cm and its surface was generally smooth.

Microscopic examination showed sections of normal bone tissue with foci of enchondral ossification and areas of haemorrhage and inflammatory cells, which was consistent with the diagnosis of osteochondroma. The cartilaginous cap of osteochondroma showed no evidence of malignant transformation.

Clinical examination 12 months postoperatively showed normal mobility of the right shoulder, but it was still at a lower level than the left side. A follow-up CT scan showed no evidence of local recurrence.

Discussion

Osteochondromas are primary bone tumours, which are usually located in the distal femur, upper tibia or upper humerus. Although the exact aetiology of the growth
is not known, a peripheral portion of the physis is thought to herniate from the growth plate. This metaplastic cartilage grows to form the exostosis, which is connected to the bone by a thin stalk [4]. Patients having osteochondroma or exostosis most commonly present in the second decade of life, similar to the present case. A bony mass without pain is the most common presenting symptom. In other cases, diagnosis is made incidentally, based on radiographs. Pain is generally uncommon and is due to pressure on the surrounding soft tissue, underlying bursitis, fracture of the stalk due to trauma or, rarely, malignant transformation [4].

Plain radiography is the main diagnostic modality. Anteroposterior and lateral radiographs are sufficient to characterize the lesion. In certain bones such as the pelvis and the scapula, a CT scan is useful to localize the lesion when planning resection as was done in this patient. MRI is needed only if malignancy is suspected. A bone scan is not useful [6].

The scapula is involved in 4% of cases [3] and various authors have reported scapular osteochondroma [5] similar to the present case. Very few tumours arise from the ventral surface of the scapula. Tumours that arise from the ventral surface of the scapula result in painful limitation of shoulder abduction and winging of the scapula. Our patient also presented with pain. He had drooping of the right shoulder. A grating sensation was felt when the arm was passively abducted. Active abduction of the shoulder was possible to 90°. There was winging of the scapula that was more prominent on active abduction.

Formation of a bursa is reported between the tumour and the chest wall. This is due to the constant friction between the tumour and rib cage during active movements of the shoulder. A sudden increase in size and pain can also occur when a bursa gets swollen [7]. Our case had a large bursa with a recent increase in size.

Swelling was the most common clinical presentation reported. Winging of the scapula [8, 9] can result from mechanical blockage of free movement. This patient also presented with winging.

Malignant transformation of osteochondroma has been the principal concern, and its incidence in solitary osteochondroma is 1%. Malignant change is characterized by a sudden increase in the size of the tumour accompanied by pain. Thickness of the cartilaginous cap of osteochondroma is one of the predictors for this transformation. A cap thinner than 1 cm usually indicates a benign condition, whereas a cap between 1 and 2 cm may be considered questionable, and a cap thicker than 2 cm generally corresponds to malignant transformation [10].

Thickening and irregularity of the cartilaginous cap in adults are extremely alarming features [11]. A non-mineralized or poorly mineralized mass of a large osteochondroma indicates the presence of secondary chondrosarcoma in osteochondroma [11]. It is also important to differentiate the formation of a bursa from malignant transformation in the management of the tumour. A CT scan is very helpful for defining the mineralized pattern of the lesion. Also the presence of a fluid-filled sac, proved by CT examination, indicates large bursa formation rather than a tumour, including malignant transformation of osteochondroma. Fine-needle aspiration is a reliable diagnostic modality for confirmation of a bursa.

Treatment of osteochondroma is achieved by resection of the tumour, including its stalk. Incomplete resection can lead to recurrence. In solitary osteochondroma local recurrence after resection is less than 2%.

Conclusion

A case of scapular osteochondroma associated with pain and winging treated by excision and follow-up showed no sign of clinical or radiological recurrence.
References


