An Intramuscular Chondrolipoma of the Scapula: A Case Report of a Rare Tumor in an Unusual Location

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Learning Points for this Article:

Even though there's high sensitivity of magnetic resonance imaging examination, sonographic survey is still indispensable for the precise diagnosis for chondrolipoma.

Abstract

Introduction: Chondrolipomas are rare benign mesenchymal tumors primarily occurring in the shoulder region. To the best of our knowledge, only one case of chondrolipoma arising from the shoulder has been reported. We herein report an intramuscular chondrolipoma located in an unusual area of the scapula. Our case is interesting because magnetic resonance imaging (MRI) that shows lipomatous tumor masses with cartilaginous nodules may mislead surgeons into not considering the possibility of chondrolipomas.

Case Report: A 62-year-old female, without any systemic disease, trauma, or history of surgery, presented with a unique case of a large intramuscular chondrolipoma of the scapula. This protruding lump over the right shoulder was present for 3 months in the patient without pain or limited range of motion. A sonographic evaluation revealed a homogeneous hypoechoic lesion in the posterior right shoulder. MRI showed that the chondrolipoma measured 7.5 × 4.6 × 3.9 cm, without remarkable bony invasion, with high signal intensity over the mass in T1-weighted images, indicating cystic changes, and mild signal enhancement within the cyst in T2-weighted images. Surgical marginal excision was performed. We identified yellowish, greasy, and firm soft tissue and two cartilaginous nodules inside the lipomatous tissue. Pathological findings revealed mature adipose tissue with a fibrous capsule and true cartilage inside. Post-operative outpatient follow-up found no recurrence after 2 years.

Conclusion: Intramuscular chondrolipoma arising from the shoulder has been rarely reported. MRI and sonography are helpful in the diagnosis.

Keywords: Chondrolipoma, Lipoma, Shoulder, Scapula, Magnetic resonance imaging, Wide excision.

Introduction

Chondrolipomas are rare forms of benign mesenchymomas containing mature cartilage and adipose tissue. Mesenchymomas are tumors composed of at least two mesenchymal tissues in addition to fibrous elements [1]. They can occur in almost any region of the body, particularly in the soft tissues of the skeletal system, breast, pharynx, and nasopharynx. To date, only a limited number of cases of chondrolipomas have been reported. To the best of our knowledge, only one case of chondrolipoma in the shoulder area has been reported [2]. Here, we report a case of an intramuscular chondrolipoma of the scapula and describe the findings of sonography, magnetic resonance imaging (MRI), and pathological examination.

Case Report

A 62-year-old woman presented with a protruding lump over the posterior right shoulder, which was present for 3 months, without pain or limited range of motion. She had no systemic

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Author's Photo Gallery


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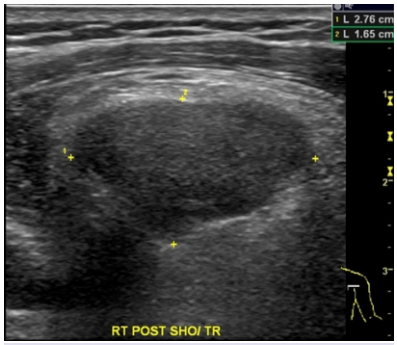

Figure 1: Chondrolipoma in the scapula of a 62-year-old woman. Sonogram displayed a well-demarcated, homogenous hypoechoic lesion at the muscle layer of the right posterior shoulder, approximately 2.76×1.65 cm in size.

disease, trauma, or history of surgery. A soft, firm lump over the right scapula was noted. A sonographic evaluation revealed a homogeneous hypoechoic lesion measuring approximately 2.76 × 1.65 cm, which arose from the muscle layer of the right posterior shoulder (Fig. 1). MRI showed a mass lesion in the posterior aspect of the right shoulder, with attachments to the infraspinatus and deltoid muscles, without remarkable bony invasion. The size of the mass was approximately 6.08 × 3.84 × 4.07 cm. MRI revealed high signal intensity over the mass in T1-weighted images, indicating cystic changes, and mild signal enhancement within the cyst in T2-weighted images, which suggested a lipomatous tumor (Fig. 2 and 3). Surgical excision was performed. The specimen consisted of soft tissue that was yellowish, greasy, and firm, measuring 7.5 × 4.6 × 3.9 cm. In addition, two cartilaginous nodules, measuring up to 3.6 cm, were identified in the lipomatous tissue (Fig. 4 and 5). Pathological examination revealed an intramuscular chondrolipoma consisting of an abnormal collection of mature adipose tissue associated with a fine fibrous capsule. True cartilage was also identified inside the chondrolipoma (Fig. 6).

Discussion

The term mesenchymoma was originally defined by Stout in 1948 to describe tumors containing at least two mesenchymal tissues not normally found together [1]. Chondrolipomas are benign, cartilage-containing mesenchymomas of the soft tissues. They are rare lesions that should be treated by surgical excision. Two explanations for the pathogenesis of cartilage formation in benign mesenchymomas have been proposed [2]. The cartilage may arise from the chondro-osseous metaplasia of the adipose tissue, presumably as a result of mechanical stress or trophic disturbance. Alternatively, the cartilage may spontaneously originate from multipotential cells in the mesenchymoma [3, 4, 5]. Weiss et al. suggested that mesenchymal metaplasia leads to cartilage and bone formation in the adipose tissue [6].

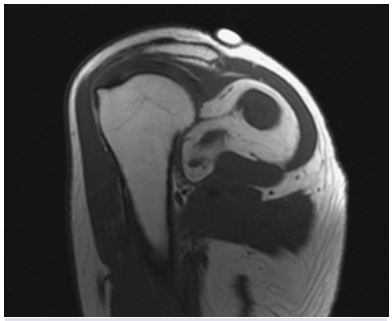

Figure 2: T1-weighted magnetic resonance imaging of the sagittal plane revealed a 6.08×3.84×4.07 cm mass lesion in the right shoulder with infraspinatus and deltoid muscle, and cystic changes with a rim-enhanced lipomatous tumor.

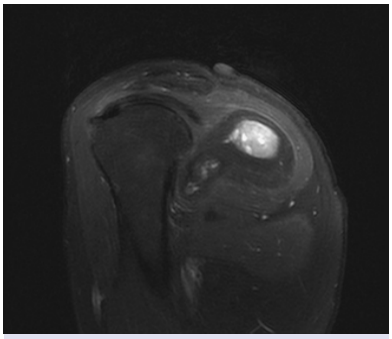

Figure 3: T2-weighted magnetic resonance imaging of the sagittal plane revealed mild signal enhancement with poorly defined margins within the cyst, which suggested chondroosseous calcification or mineralization within the adipose tissue.

Chondrolipomas are rare forms of lipomas with cartilaginous metaplasia, which may be found in almost any part of the body, particularly in the connective tissue of the breast, head and neck area, and skeletal muscles [7]. Several cases of chondrolipomas have been reported, arising in the extremities, such as the palm, sole, toe, thigh, and popliteal fossa, as well as in the head and neck [4, 5, 8, 9, 10, 11]. A case of a chondrolipoma that arose from the pelvic cavity has also been reported [12].

Radiographic images of lipoma subtypes have been reported [6]. However, the radiographic features of chondrolipomas have not been described in detail. MRI findings in our patient were a bright signal over the mass in T1-weighted images, indicating cystic changes, and mild signal enhancement within the cyst in T2-weighted images. As in the previous case reports, this heterogeneous signal intensity showed no remarkable differences in MRI findings [13]. Macroscopic observations during the operation and the pathological results showed that the nonlipomatous area was a cartilaginous lesion with ossification. In chondromas and enchondromas, T2-weighted images of chondromatous lesions show a mixture of low- and high-intensity areas, indicating a lobulated structure with variable calcification [13]. In our patient, these features were not seen.

Hemangiomas associated with adipose tissue and mineralization with poorly defined margins should be considered as a possible diagnosis in our patient, given that the patient's MRI findings were generally similar to those of hemangiomas. Sonographic imaging of hemangiomas usually shows hyperechoic density rather than hypoechoic density, as found in our patient's chondrolipoma. In

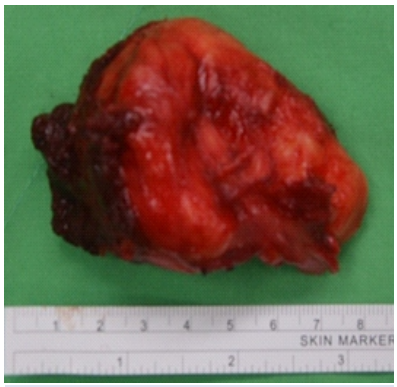

Figure 4: Gross view of the excised tumor showed yellowish, greasy, and firm chondrolipoma, measuring 7.5×4.6×3.9 cm in size.

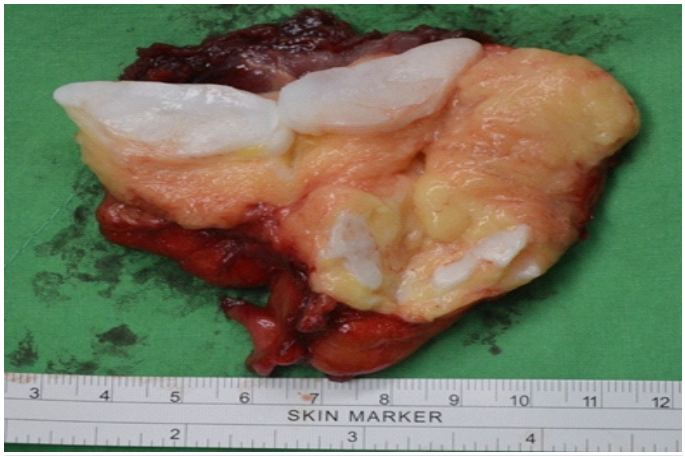

Figure 5: Cross-section of the excised tumor revealed two cartilaginous nodules inside the lipomatous tumor, with irregular margins, measuring up to 3.6 cm and 1.5 cm in length, respectively.

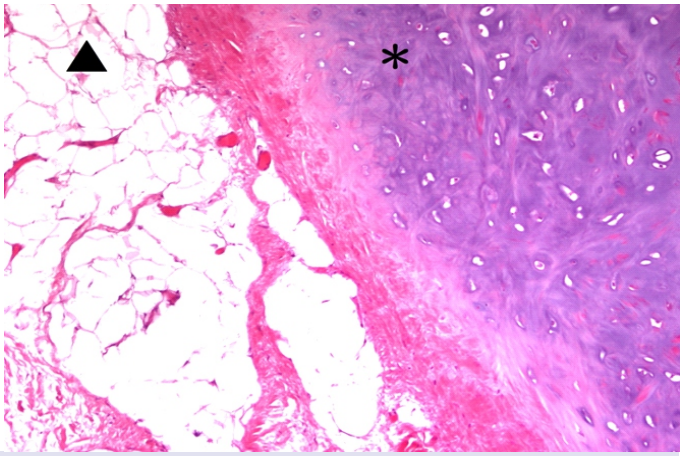

Figure 6: Histological examination of intramuscular chondrolipoma indicated an abnormal collection of mature adipose tissue (arrow sign) associated with a fine fibrous capsule, with true cartilage inside (satellite sign).

addition, central ossification in our patient's tumor, as shown by radiography, indicated a chondrolipoma rather than a phlebolith associated with a hemangioma.

Pathological examination revealed a cartilage component of the tumor; however, it was uncertain whether ossification developed from enchondral ossification in the cartilaginous area or from lipomatous tissue differentiation. Cartilaginous tumors occur with ossification in the chondroid matrix such as synovial chondromatosis, enchondromas, and soft-tissue chondromas. Recent studies have reported that adipose-derived stem cells possess the capability for myogenesis, osteogenesis, and chondrogenesis. In our patient, the location of ossification was focal in line with the pattern of chondrogenesis. We hypothesized that ossification in the chondrolipoma occurred by enchondral ossification over a long period of time. On the basis of imaging and pathological findings, our patient was finally diagnosed as having an ossifying chondrolipoma rather than an osteochondrolipoma.

Conclusion

Intramuscular chondrolipoma arising from the shoulder has been rarely reported. We report a case of a chondrolipoma of the scapula that arose from the right posterior shoulder with attachments to the infraspinatus and deltoid muscles. MRI and sonography are useful for diagnosis. The treatment of choice for chondrolipomas is surgical excision.

Clinical Message

Diagnosis with imaging for chondrolipomas and fatty tumors is challenging, because chondrolipomas involved chondroosseous differentiation. Even though the high sensitivity of MRI examination, sonographic survey is still indispensable for precise diagnosis.

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