UNUSUAL INTRAMUSCULAR LIPOMA OF DELTOID MUSCLE

Stylianos Kapetanakis1, Jiannis Papathanasiou2, Antonios Dermon1, Alexandra Dimitrakopoulou1, Athanasios Ververidis1, Pelagia Chloropoulou1, Konstantinos Kazakos1
1Department of Orthopaedic Surgery, Medical School, Democritus University of Thrace, Alexandroupolis, Greece, 2Department of Physical and Rehabilitation Medicine Medical University of Plovdiv, Bulgaria

ABSTRACT

Lipomas are common soft tissue tumors usually located under the skin. Nevertheless, intramuscular lipomas of deltoid muscle are unusual tumors. We present a case of 74 years old woman with an intramuscular like clepsydra lipoma of deltoid muscle. The lesion was a palpable soft mass at the lateral side of the humerus. The patient had no previous history of trauma. The main symptom was pain only in abduction and extension. Imaging, pathological findings and surgical excision are discussed.

Key words: deltoid lipoma, deltoid muscle, intramuscular

INTRODUCTION

Intramuscular lipomas of the deltoid muscle are rare tumors. Few cases have been reported until now1-3. Here we present an interesting case of a deep intramuscular lipoma of the deltoid muscle with its clinical features, the roentgenographic appearance and the complete relief following excision.

CASE REPORT

A 74 year old woman presented to the emergency department with a history of progressive enlargement in the left shoulder. She did not report any major health problems and was not on any stable medication. Three months ago she found a palpable mass on the upper part of the lateral side of her left humerus. She had no symptoms in general apart from a painful sensation when abducting or extending her humerus, with a complete relief in neutral position. There was no history of previous trauma. Physical examination revealed an approximately 10x6 cm soft, not tender, freely mobile mass over the anterolateral aspect of the deltoid. The mass appeared to be superficial and deep to the deltoid muscle. The range of motion preoperatively was 90° flexion, 20° extension, 60° abduction, 80° external rotation and 60° internal rotation. Magnetic resonance imaging revealed a large, well defined mass of increased signal in both T1 and T2 weighted images surrounding the humerus from anterior to posterior and inside the deltoid mass having the shape of clepsydra (Fig. 1). With the diagnosis of the intramuscular deltoid the tumor was marginally excised through a direct lateral approach (Fig. 2). In a supine position and the affected arm at the edge of the surgical table we made an 8-cm-longitudinal incision at the lateral aspect of the arm. We split the deltoid muscle fibers, inserted a stay suture at the inferior apex of the split to prevent it from extending distally and causing damage of the axillary nerve. We then exposed the subacromial bursa and we saw the mass extending to the periosteum and the upper part of the humerus between the deltoid muscle and the axillary nerve. We carefully isolated the neuromuscular structures and removed the mass. The axillary nerve was not dissected out and the patient postoperatively had normal skin sensation, normal motion range without any disability in her daily activities. Postoperatively, the range of motion was 160° abduction, 90° flexion, 40°, 80° of external rotation, 60° internal rotation. Histological examination confirmed the diagnosis of benign intramuscular lipoma.

DISCUSSION

Lipomas are common soft tissue tumors usually located under the skin but appearing in deeper layers or various organs. They can vary in size from walnut to a large baseball and usually have a soft rubbery sensation. Deeper lipomas can occur in almost any anatomical site.

Lipomas found within a muscle are called intramuscular1-3 (or infiltrating which are extremely rare) and those between the muscles called intermuscular4. Inter and intramuscular lipomas have been described in the buttock upper thigh, calf and shoulder girdle.2,4-6 These lesions may cause local...
pain due to soft tissue compression, expansion or neurovascular compression and in one case has been described even a subluxation of the glenohumeral joint. Intramuscular lipomas of the deltoid muscle are very rare in English literature. No more than 10 cases have been reported until now. In our

**Figure 1.** MRI images. T1, T2 images showed a mass around the humerus inside the deltoid muscle. The mass had signal characteristics identical to those of normal fat.

**Figure 2.** Macroscopical view of deltoid lipoma
case the shape of lipoma was unusual, having the shape of clepsydra and appeared superficial and deep intramuscular around the humerus.

Generally, the diagnosis is difficult since there are no pathognomonic clinical features and lipomas can be confused with other soft tissue masses. Differential diagnosis includes haematomas, haemangiomas, myxomas, lymphomas, synovial cysts, muscle herniation and muscle tear. CT scan and MRI are useful for establishing diagnosis. We prefer MR imaging because it provides greater contrast differentiation between the mass and its surrounding tissues. MR imaging also provides better definition of the mass margins than CT scan. In our case the magnetic resonance imaging revealed that the mass was a lipoma.

The diagnosis is also confirmed by the histological examination. In this case it revealed a well differentiated adipose tissue which in some areas contained widely separated but often normal or slightly atrophic muscle fibers. The relatively big size and the quite slow growing rate of intramuscular lipomas might be promoting disuse atrophy in the surrounding muscle fibers (Fig. 3).

The typical infiltrative growth pattern of intramuscular lipoma sometimes may be responsible of a potential misdiagnosis or malignancy. Histological differential diagnosis of intramuscular lipoma is mainly versus liposarcoma. Pathological findings in liposarcomas are multivacuolated lipoblasts, cellular pleomorphism, marked vascularization and mitotic activity which establish the diagnosis.

The subdeltoid, the deltopectoral, the anterior and the posterior excision are the most commonly used surgical exposures among many different types. Most of subdeltoid lipomas can be removed through the deltopectoral approach. In this case the surgeon can remove the posterior part of the tumor by abducting and internally rotating the humerus. However, if the tumor is in close contact with the axillary nerve, the subdeltoid approach would be better because it can expose the nerve under direct vision and therefore is much safer. Subdeltoid approach provide wide exposure of the humerus and it is particularly useful in surgery for osteomyelitis and neoplasms. In our case the lipomatous mass was marginally excised through a direct lateral approach. We decide to use this procedure because we have much more experience with this kind of excision. The axillary nerve was not dissected out.

**Figure 3.** Microscopically, the tumor showed mature adipocytes, no lipoblasts and normal or slightly atrophic muscle fibers (H&E x 100)
The patient is in a good clinical condition, free of symptoms during her 6 month follow up.

REFERENCES