Giant intramuscular lipoma of arm: A case report and review of the literature

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ABSTRACT

Lipomas are the most common type of tumor of soft tissue and can occur anywhere in the body. Giant lipomas, which are defined as lesions greater than 5 cm, are associated with the risk of malignancy. Preoperative assessments, such as magnetic resonance imaging (MRI) and biopsies, are the optimal methods for making diagnoses and designing treatment plans. Incomplete excisions may cause recurrence of the masses, causing complications in the management of patients. In this report, we present a case of a giant lipoma that is located in an upper extremity of a patient, causing nerve compression, as well as a review of related literature.

Key words: Giant, lipoma, liposarcoma, arm, upper, extremity

Introduction

Lipomas are subfascial benign tumors of mesenchymal origin. They arise from primordial adipocytes, not from adult fat cells. Therefore, they increase in size as a patient accumulates adipose tissue but do not decrease with weight loss. They usually represent well-circumscribed, encapsulated masses that are freely mobile beneath the skin. Lipomas can occur in many locations, however, they are primarily located in the subcutaneous tissue of the head/neck, shoulders and back. Deep soft tissue lipomas are less common than superficial lipomas; they can be found intermuscularly, intramuscularly or intraosseously associated with viscera or sites of trauma [1, 2]. Subtypes include classic lipomas, angiolipomas, spindle cell lipomas, fibrolipomas, myelolipomas and pleomorphic lipomas. They are usually painless, growing slowly, reaching large sizes, especially when located in deep subfascial planes.

Compressive symptoms and cosmetic complaints usually attract medical attention when the tumors are located in the upper extremities. In the literature, the tumor is defined as a giant lipoma when its size reaches larger than 5 cm in any dimension [2,3]. This type of lipoma warrants further examination for possible malignancy [2]. Giant lipomas in the upper extremities are very rare, but when they occur, surgeons must take immediate action. The lipoma should be treated by adequate open surgical removal of the tumor, followed by careful monitoring of the patient by ultrasonography.

In this report, we present a case of a giant lipoma of the arm, which is accompanied by nerve compression, and discuss relevant literature to the case.
**Case Report**

A 54-year old female was admitted to our clinic with a mass on her left arm. The mass existed for ten years and has since increased in size. Recently, there have been symptoms of increased numbness and slight pain originating behind the mass on the left arm of the patient. On physical examination of the mass, the tumor was usually painless upon palpation and completely mobile. A slight hypoesthesia was identified in the left upper extremity and no motor deficit was found.

On assessment by ultrasonography, we observed a mass (105 x 62 mm in size) on the flexor side of the left arm, which extended intramuscularly to the extensor side, with no definite vascularity. From MRI imaging, the mass was found to begin from inside of the brachial muscle, which extends proximally to the axilla, and it was observed that the posterior of the humerus showed continuity with the anterior of the triceps (Figure 1). In the T1-weighted images of the lesion area, some hypointense areas were observed. Some contrast enhancement was observed in these same areas as well. It has been reported that these changes result from fat necrosis. The lesion showed close proximity to the periosteum and the radial artery was found to flex outward. Although occasional numbness and pain in the left arm was reported, no obvious signs of nerve compression were detected. Therefore, we did not request a preoperative EMG and a decision was made to remove the total mass.

The patient was taken to surgery under general anesthesia without a tourniquet because of its proximity to the axilla. In the left arm medial, the mass was revealed using a Lazy-S-shaped incision. During the intraoperative stage, the mass was observed to be in contact with the periosteum of the humerus in close proximity to the radial artery and nerve (Figure 2). The lipomatous mass was dissected from the radial artery and nerve and carefully removed with its capsule completely, under magnification using surgical loops. Macroscopic evaluation showed that the lipoma was 10-12 cm in size (Figure 3). Histopathological examination identified the mass as being a giant lipoma. There was no evidence of any serious complications, as no recurrence of the mass during the 18 month, postoperative, follow-up period of the patient was found.
Discussion

Lipomas usually grow as single masses and rarely multiple [4]. They may vary not only in size but also in shape (uni- or multi-lobed, round, fusiform, ovoid, or dumbbell-shaped) [5]. Lipomas can arise in association with a number of syndromes, such as Gardner syndrome, adiposis dolorosa, hereditary multiple lipomatosis, and Madelung disease [6]. Presumably due to their tendency to accumulate more adipose tissue, lipomas occur more often in females; in fact, our patient is a female.

Lipomas usually grow very slowly and the etiology of rapid growth into giant lipomas is still in debate. Some authors suggest that blunt trauma can cause rupture of the fibrous septa and anchorage connections between the skin and deep fascia, which allows the adipose tissue to proliferate [7]. However, according to the literature, some patients denied suffering trauma in their upper extremity. In some patients, MRI findings identified injuries of the upper extremities [8], with eventual rapid growth of intramuscular lipomas. In our case, we observed from the MRI that the mass located in the intramuscular area was compressing the radial artery and the nerves. In the postoperative stage, signs of pain and symptoms of compression disappeared over time.

In several recent studies, rapid growth of giant lipomas was found to be associated with risk factors of malignancy [2, 8, 9]. Liposarcomas are the most common type of soft tissue sarcoma [10], usually arising between the 4th and 6th decade of life. Lipoblasts are most commonly found in the intramuscular fat tissue and are associated with liposarcomas. In the literature, liposarcomas are classified into three types: [1] well-differentiated liposarcomas that display low malignancy; [2] myxoid liposarcomas, which exhibit intermediate malignancy behaviour; and [3] round and pleomorphic liposarcomas that exhibit early metastasis and aggressive behaviour.

Proper evaluation of large masses in the upper extremity includes the use of imaging techniques, such as MRI, CT and US as radiological options. Imaging and tissue sampling are the best methods for ruling out the risk factors of malignancy. MRI and/or biopsy are the best options available. Due to increased vascularity in septal structures, the distinction between liposarcoma and lipoma can easily be made using a gadolinium MRI, which has been reported in some studies [10, 11]. In high-grade liposarcomas, little fat tissue is found in images by MRI. Ultrasound and computerized tomography-guided biopsies can be used for diagnosis [12]. Some studies suggest that suction-assisted lumpectomies can be used for the treatment of lipomas. However, recent data is not consistent with this idea [10]. To prevent the recurrence of giant lipomas, masses must be removed completely. Surgery can be difficult, as the nerves and other anatomical structures must be protected. Dissection under magnification using surgical loops is easier than using conventional surgical techniques.

Proper management of giant lipomas requires open excision. Usually, lipomas are well capsulated, allowing complete resection. Excision of intramuscular lipomas is technically challenging and usually requires removal of neighbouring muscle tissue to allow for adequate margins. The pathological report is vital for surgical treatment and management of giant lipomas.

In conclusion, all giant lipomas of the upper extremity must be removed completely because of the potential for malignancy. Preoperative assessments with radiological imaging is making surgical procedures easier. We recommend careful dissection under magnification using surgical loops to prevent nerve injury during surgery. Failure to incompletely excise giant lipomas may lead to the development of liposarcomas in the future. This situation requires wide excision of the tumor, in conjunction with radiation or chemotherapy. Close follow-up to monitor recurrence in patients with such lesions is crucial. They need to be advised not to fail to attend postoperative treatment.

Conflict of interest
None.

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