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Giant intramuscular lipoma of the Sartorius: a case report

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Abstract: Intramuscular lipomas are rare soft tissue tumors of mesenchymal origin. They represent a relatively uncommon condition and accounts for less than 1% of all lipomas. Their clinical, histological and imaging characteristics may resemble well-differentiated liposarcomas, further adding to the difficulties in the differential diagnosis and treatment. In deep and very large lipomas, the compression or expansion to the adjacent soft tissues and peripheral nerves can lead to pain, neurological and mechanical dysfunctions. Although it is generally believed that intramuscular lipomas primarily occur in the large muscles of the limbs and the trunk, they can occur in almost any anatomical site. This study examined a rare case of a giant intramuscular lipoma of the Sartorius muscle that led to a mechanical dysfunction of the hip, and its management, allowing clinicians to become familiar with this lesion.
Keywords: Lipoma, Deep-seated, Intramuscular, Giant, Sartorius, Tumor

INTRODUCTION

Intramuscular lipomas are subfascial benign mesenchymal soft tissue tumors composed of white mature adipose cells; they represent a relatively uncommon condition and accounts for just 1.8% of all primary tumors of adipose tissue and less than 1% of all lipomas [1]. Intramuscular lipomas are classified into infiltrative and well-circumscribed types, which comprised 83% and 17% of cases respectively [2]. Pathologically [1], well-circumscribed lipomas are encapsulated slowly painless growing soft tissue masses, variable in number, size and shape. Lipomas are often isolated and rarely multiple, they may vary in size and some cases reported are giant, defined as greater than 5 cm in diameter [3]. The aim of the present report is to describe an unusual case of an extremely giant intramuscular lipoma within the Sartorius muscle and discuss the epidemiology, histopathology, imaging characteristics, differential diagnosis and management of the intramuscular lipomas.

CASE REPORT

A 38-year-old female patient was examined at our orthopedic clinic due to a long standing mass on her left hip. The patient reported a 10 years history of painless swelling on his hip that gradually enlarged over the last two years with consequent tenderness. The clinical examination revealed a large mass of approximately 18 cm in diameter in the anterior side of the left hip [Fig. 1]. The lump was smooth-surfaced, immobile, had increased skin tension and was non pulsatile with mild tenderness, which radiated towards the lower limb. The patient was unable to entirely flex her left hip. An MRI scan of the left hip was performed that showed encapsulated intramuscular lesion (dimensions: 15, 4x12, 5x11 cm) in the left Sartorius with well defined margins and low intensity signal at the T1 [Fig. 2] and fat suppression sequences [Fig. 3]. No nerve and vessel entrapment was seen. MRI findings were consistent with the diagnosis of a giant intramuscular lipoma of the left Sartorius muscle.

A biopsy was performed and histological examination of the specimen revealed a tumor consisting of well circumscribed mature adipocytes indicative of a lipoma. A week later, the patient was operated under spinal anesthesia. During surgery, an incision parallel to the largest diameter of the mass was selected. A circumscribed mass with intact capsule was noted in the Sartorius compressing the surrounding muscles [Fig. 4], although no vessels or nerves were involved. The mass was removed en bloc [Fig. 5]. The histopathologic examination confirmed a giant intramuscular lipoma of the left hip (15x13x10 cm), comprising mature fat cells without the involvement of muscle fibers, with no evidence of cellular atypia, mitosis or necrosis. The patient recovered and was discharged 2 days after surgery without any complications. An 8 months follow-up was carried out and no recurrence was detected.

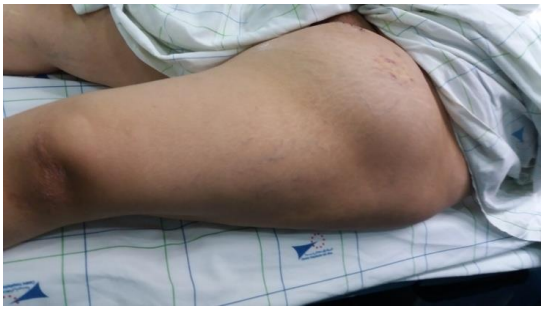

Fig 1: swelling of the left hip

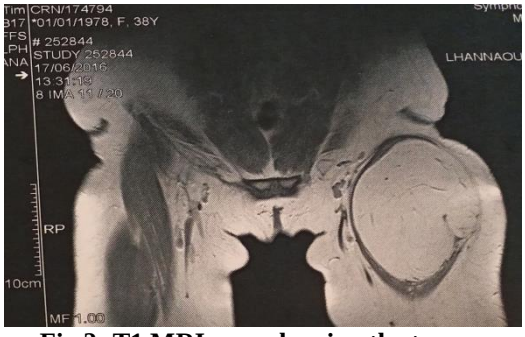

Fig 2: T1 MRI scan showing the tumor

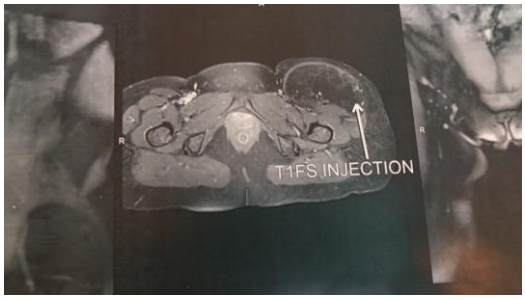

Fig 3: T1 with fat suppression MRI scan

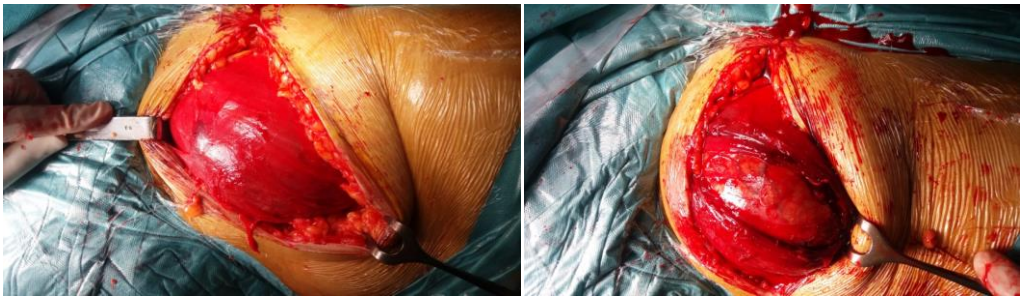

Fig 4: Peroperative images of the intramuscular tumor

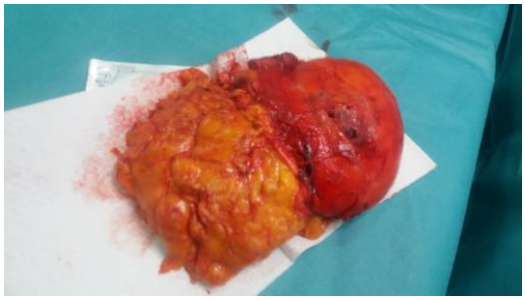

Fig 5: Giant lipoma after excision

DISCUSSION

Intramuscular lipoma is a relatively uncommon condition and accounts for just 1.8% of all primary tumors of adipose tissue and less than 1% of all lipomas [1,4]. Intramuscular lipomas may occur in all age groups, from childhood to old age. However, the majority occur between the ages of 40 and 70 years [5, 1]. Clear gender predilection has not been established. However, there is female predominance in the majority of studies where intramuscular lipomas were separately evaluated [6, 1, 7]. Although it is generally believed that intramuscular lipomas primarily occur in the large muscles of the limbs and the trunk [3, 5, 8]. They can occur in almost any anatomical site. To our knowledge, this is the first reported case of a giant intramuscular lipoma within the Sartorius muscle that led to mechanical dysfunction.

Clinical expression of intramuscular lipomas depends on the dimensions of the mass, mostly they present as a slowly growing asymptomatic mass or swelling with no palpable mass. In deep and very large lipomas, the compression or expansion to the adjacent soft tissues or the adjacent peripheral nerve causes pain which is a late and uncommon symptom [3, 8-10]. Paresthesias and nerve distribution neurological deficit can be observed as well, due to nerve impingement [8, 11, 12] .When the mass increases in size, decreased range of motion or functional limitation due to mechanical restriction may be an associated complaint. Duration of symptoms before diagnosis may vary from a few months to years. Our patient suffered from mild tenderness with a limitation of the movements of her left hip especially the flexion for more than 2 years most likely due to the extremely large mass, but no neurological deficit was observed though.

Giant intermuscular lipomas should be differentiated from liposarcomas, malignant fibrous histiocytomas, metastatic carcinomas or other benign soft-tissue lesions, such as a cyst, hematoma, muscle herniation, cystic hygroma or fibrous myositis [8, 13]. Intermuscular lipomas should also be distinguished from liposarcomas in terms of malignancy. The possibility of liposarcoma should be considered when a fatty tumor with a dimension of >10 cm has shown rapid growth [14]. Imaging examinations may be of crucial importance in the differentiation between the two tumors. On CT, a liposarcoma shows a fat density mass with areas of unclear amorphous density, usually accompanied by thick and thin streaky soft tissue densities, with occasionally interrupted streaks. On MRI, signal intensity of fat is evident, however, the intensity is lower compared with normal fat in certain areas, and the thick streaky structures are less distinctive when compared with the CT [4, 8]. Moreover, despite a proven negative imaging, a liposarcoma may still be considered. Therefore, a careful histopathologic evaluation is required, and the presence of nuclear pleomorphism and multinuclear giant cells may help to distinguish lipomas from malignant liposarcomas [3, 8, 15]. In the present case, we performed a chirurgical biopsy of the mass even though the findings of imagery (MRI) were consistent with the diagnosis of a giant intramuscular lipoma.

Treatment of intramuscular lipomas depends on the size of the tumor, its location, and clinical symptoms. If the lipoma is small and does not cause functional limitations, simple observation and reassurance of the benign nature are sufficient. Surgical excision is the treatment of choice when the patient is symptomatic and also for cosmetic purposes. Marginal excision of the well-circumscribed area and wide excision with free margin in the infiltrative areas, whenever possible, will help preventing recurrences [8, 16]. Debulking is also an acceptable option if in an unsuitable area for complete excision or if complete resection will lead to a significant functional impairment. Chemotherapy and radiotherapy are not generally recommended for the treatment of intramuscular lipoma due to the benign character of this tumor [8]. In our case we were able to perform a marginal excision removing the tumor entirely.

Currently, the disease recurrence rate of intramuscular lipoma is believed to be very low [3, 8, 16, 17] Recurrence can occur and is thought to be due to incomplete removal of lipoma during surgery. This is most likely due to the proximity of the tumor to important anatomical structures or fear of disabling functional limitations with complete resection of the involved muscle. Su *et al.;* treated surgically 8 patients with intramuscular lipomas at different locations and no local recurrence were noticed in an average follow up period of 40 months. They performed marginal excision around the well encapsulated border area and wide excision in the infiltrating areas. The infiltrating areas were identified by preoperative MRI [16]. Bjerregaard *et al.;* treated 12 patients surgically by wide resection. During follow up averaging seven years, the tumor recurred in five patients [18]. Basset et al. investigated 55 patients with intramuscular lipoma and only two (4%) had disease recurrence [17]. For our patient, no recurrence was observed during a follow up of 8 months.

CONCLUSION

Intramuscular lipomas are relatively uncommon lipoma subtype. Due to the unfamiliarity with that pathology, they have been commonly misclassified and misdiagnosed with other benign and malignant lesions. Although a careful clinical and imaging examination is usually sufficient to reveal the typical characteristics of intramuscular lipomas, only the histological proof can eliminate other tumors especially a liposarcoma. This can further allow appropriate treatment and prognosis.

Conflict of interest: None declared.

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