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A case report

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Giant lipoma in the thigh. A case report

Lipomas are the most common benign mesenchymal tumours; they are composed by mature lipocytes and are usually located in the subcutaneous tissue. They may occur at any place in which there is adipose tissue, most of them are found in the upper part of the body, especially in the trunk and neck, although they may also develop in other sites, including the hand. Most lipomas are small, weigh only a few grams, and usually the maximum diameter is smaller than 2 cm. Whereas, to be referred to as "giant", the lipoma must be at least 10 cm in diameter or weigh a minimum of 1,000 g. Because of the excessive size, giant lipomas may cause functional limitations, such as lymphedema, pain syndromes or nerve compression. Because of the peculiarity of this condition, the great size of the lesion and the difficulties in its diagnosis and treatment, we reported a case of a giant fibrolipoma in the thigh in a 27 years old woman.

KEY WORDS: Giant lipoma, Lipoma, Lipoma of the leg

Introduction

Lipomas are the most common benign mesenchymal tumour (2.1 per 1,000 people) [1]; they are composed by mature lipocytes and are usually located in the subcutaneous tissue [2,3]. Benign fatty tumours may occur at any place in which there is adipose tissue, most of them are found in the upper part of the body, especially in the trunk and neck, although they may also develop in other sites, including the hand [4,5].

Lipomas can also be subfascial and be further classified as parostal, interosseous or visceral, as well as intra-muscular (most often in the trunk) and inter-muscular (most often in the anterior abdominal wall) [6,7]. Intra and inter-muscular lipomas are also referred to infiltrating lipomas [1].
Among the visceral lipomas, Grasso and Guastella reported that those of the colon are localized at submucous level: submucosal lipomas are usually asymptomatic but may cause bleeding, obstruction, intussusception, or abdominal pain [8]; otherwise, adrenal myelolipoma is a rare nonfunctioning tumor consisting histologically of an admixture of adipose tissue and extramedullary hemopoietic elements within the adrenal glands. Most of these lesions are small and asymptomatic, but there are also giant ones, associated with endocrine disorders. These tumors are mostly detected incidentally by imaging [9].
Most lipomas are small, weigh only a few grams, and usually the maximum diameter is smaller than 2 cm [10]; those which weight more than 200 g and have a max-

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imum diameter bigger than 10 cm, are occasionally find where there is not mesenchymal tissue [10-13].
The category of benign lipomas comprehends some peculiar types of lesion:
– Fibrolipoma: in this kind of lipoma there bundled by fibrous tissue through the fatty lobules;
– Angiomyxolipoma: rare tumour characterized by a proliferation of adipose tissue associated with a myxoid stroma and multiple vascular channels;
– Chondroid-lipoma: rare, benign soft tissue tumour with features of both embryonal fat and embryonal cartilage that most often arises in the proximal limb and limb girdles of adult women. Histologically, it comprises nests and cords of rounded cells with granular eosinophilic or multivacuolated, lipid-containing cytoplasm within prominent myxohyaline stroma and may be morphologically confused with some sarcomas;
– Parosteal lipoma: extremely rare, benign neoplasm consisting mainly of mature adipose tissue and small quantities of fibrous and vascular tissue contiguous to the underlying periosteal bone (lesion does not arise in the periosteum because in this there aren't any fat cells). It is composed of mature fat cells and varying, though. At the gross examination, parosteal lipomas appear as greasy yellowish masses that adhere to the underlying periosteum [14];
– Myolipoma: characterized by an admixture in variable proportions of mature adipose tissue and bundles of smooth muscle well-differentiated cells;
– Spindle cell lipoma: it is characterized by a mixture of mature fat, bland spindle cells and wiry collagen in a variably myxoid background;
– Pleomorphic lipoma: This lesion is characterized by an intricate mixture of mature fibrous tissue, adipose tissue and myxoid tissue interspersed with cellular foci. Most characteristic of the latter are a variety of giant cells and especially the 'floret' giant-cells, so named because of the arrangement of their nuclei which is reminiscent of the petals of a flower;
– Angiolipoma: this injury typically occurs after puberty and well-circumscribed tumours are small, often painful, multiple and situated in the subcutaneous tissue, most commonly on the trunk or extremities;
– Lipoblastoma/lipoblastomasis: more common in infants and young children, under the microscope reminiscent of the fetal fat, but it seems a lipoblast and has a plexiform vascular pattern and an abundant myxoidstroma [15].

A lipoma is defined as giant, when the lesion is, at least, 10 cm in diameter or weighs, at least, 1000 g [2]. It is important to distinguish giants lipomas from liposarcomas, even if their dimensions may be similar [16]. Subcutaneous lipomas are usually small, multiple, easily identifiable, more frequently found on the upper limbs and back. Subfascial lipomas are usually less common, solitary and lobulated [17]. Lipomas are frequently found during the fifth or sixth decade of life, they are uncommon among the children, usually are encapsulated and superficial, when they are in the subcutaneous tissue; whereas if they are in deeper structures, are usually poorly circumscribed [15]. Lipomas can grow very much till to reach a great size. Macroscopically, lipomas are bright, yellow mass, similar to subcutaneous adipose tissue, separated by fine fibrous trabeculae. Microscopically, they are composed of mature adipose tissue without cellular atypia. Rarely, lipomas contain foci of mature metaplastic cartilage and bone [18]. Ultrastructurally, in typical lipomas, there are only univacuolar mature adipocytes [15]. The light electron microscope and microscopic appearance of a lipoma is not significantly different from usual adult subcutaneous adipose tissue; whereas the differences regard their lipid and lipoprotein lipase content [15]. Because of the peculiarity of this condition (especially for the location and the size), its diagnosis and its treatment we present the case of our patient, who suffers from a giant lipoma located at the medial portion of the left thigh.
On the other hand, liposarcoma is one of the more common types of soft tissue sarcomas. It is subdivided into five distinct histologic subtypes: well-differentiated (40% to 45% of all liposarcomas), mixoid, pleomorphic, dedifferentiated and mixed-type. The most common frequent locations of lipomatous tumours are: limbs, groin, scrotum, abdominal wall and retroperitoneal area [19].

Case Report

In March 2013 a 27 years old woman came to us. She had a big tumefaction in the medial part of her left thigh and the swelling have appeared about 15 years before. The patient reported the progressive growth of the mass size during the last 3 years. She didn't refer any functional limitations, pain or paraesthesia, except the cases of unpleasant sensation if she stayed too long in the upright position. The past medical history didn't mention any pathological traumas, except from the assumption of progestin for infertility. The local examination revealed a big mass spread from the third medium up to the third lower rear part of the thigh; there were neither erythema nor edema of the overhanging skin. The tumefaction had tense-elastic consistency, not aching, of little mobility and not well-defined. The results of neuro-vascular examination were negative for both of lower arts. The ultrasound scan described: "Big solid tumefaction, with homogeneous echogenicity and isoechoic to muscle, with regular margins and only peripheral vasculature. These findings are compatible with the ultrasonographic features of a giant lipoma"; the RMI confirmed the presence of "a large neo-formation in the back part of the left thigh with a maximum diameter of 25x12 centimetres in T1 (Fig. 1) with the decay of signal intensity in the sequence with the fat suppression (Fig. 2) according to the adipose contents

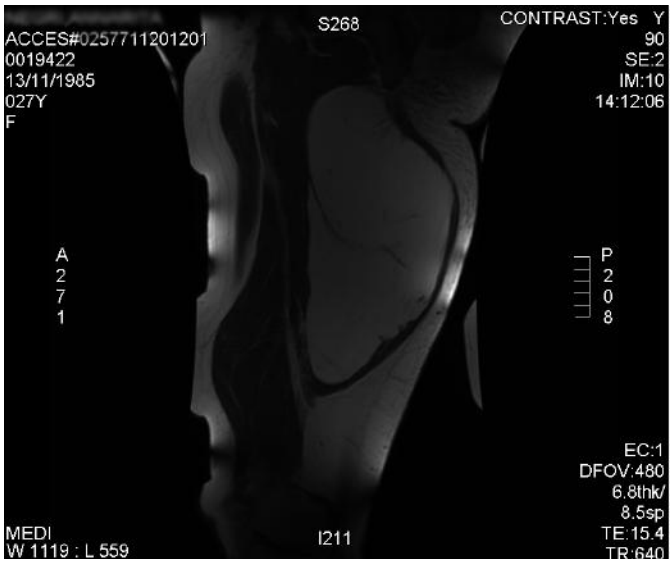

Fig. 1

Fig. 2

of the formation. No evident alterations of the morphology and signal intensity burdening the bone segments and the rest of the group muscles were observed". The surgical intervention was performed under spinal anaesthesia; was carried out a longitudinal skin incision; the mass was found in a deep level and it infiltrated the muscle-band structure, but not the neuro-vascular ones. We dissected longitudinally semitendinosus and biceps femoris muscles, to isolate the mass, which reached the adductors muscles. The origin of the lipoma was considered from the lower part of the inguinal ligament, where a stitch was applied. At this level the mass became

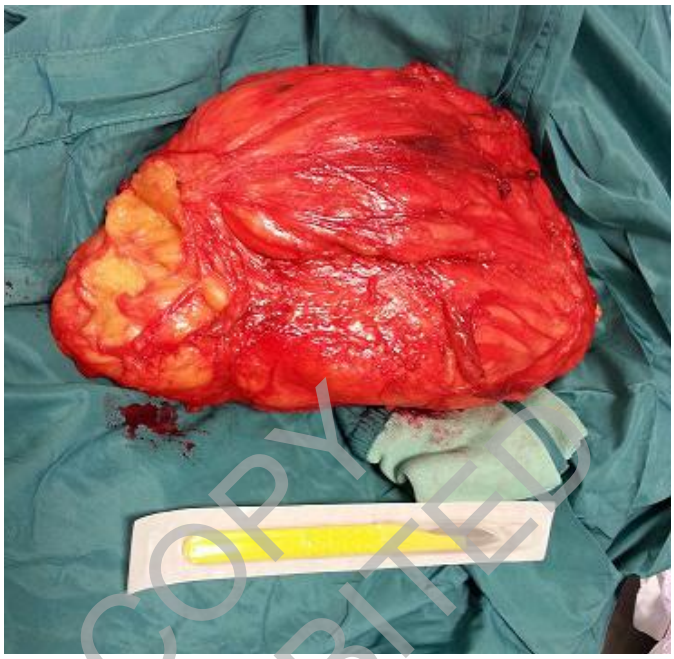

Fig. 3

branched and took contact even with the vascular nervous bundle. An aspirative drainage was placed. The post-operative period was regular, without any complications, and the patient was discharged on the second day after the operation.

Macroscopically, the tumour was well-capsuled, lobulated and yellowish at the section, with the dimensions 29x15x8 centimetres and the weight of about 2 kg (Fig. 3). The histological examination confirmed that it was a lipomatous tumour of important dimensions which was extensively infiltrating the streaked muscle tissue. The latter seemed to be focally deteriorated. It couldn't be find atypical adipose. Nevertheless, because of the dimensions and the destructive pattern of the streaked muscle tissue, it was necessary a further judgment. So the mass was submitted to immunohistochemical survey: the research of DDIT3 gene (band 12q13) chromosomal rearrangement and the consideration of MDM2 gene (band 12q15) status, with the FISH (fluorescence in site hybridization), resulted to be negative.

Discussion

The scientific literature provides several cases of giant lipomas [5, 10-13, 20-22]. The aetiology of lipomas is not yet known. They have been known to be both sporadic and inherited [23,24]. Have been considered endocrine-metabolic and genetic theories, as well as an history of previous acute trauma [25,26]. Lipoma cells are believed to arise from mesenchymal primordial fatty tissue cells and tend to

increase in size with body weight gain [27,28]. To explain the development of lipomas has been suggested a theory, according to which, the proliferation of adipose tissue occurs after a blunt trauma, which causes the rupture of the fibrous septa, migration of fat cells and the adhesion between the skin and deep fascia [29,30,31]. In the literature have been reported some cases of very large lipomas (measuring up to 55 cm in diameter and weighing as much as 2.495 kg), even if these kind of tumours are extremely rare [25,32].

When the giant lipomas are very close to vital structures, may cause functional limitations on account of their excessive size and weight or lymphedema, pain or nerve compression syndromes. A really strong demonstration of this, is the case report of Konrad Wronski and Andrzej Lachowki about a very rare case of a giant femoral lipoma causing venous obstructing syndrome in a 57 years old patient [33].

Even though peripheral nerve compression by lipomas is quite rare, Cappellani et al. reported a really interesting case of an atypical lipoma presenting as a sciatic hernia: this extremely atypical clinical presentation is the demonstration of the definitely wide spectrum of the possible lipomas localization [34].

Although one would expect that peripheral nerve compression is correlated to the size of the lesion, rather also small lipomas have been reported to cause such compression. Thus, it is clear that the localization of the lipoma is more important than the size to cause a mass effect [35].

The malignant transformation into a liposarcoma such as the sarcomatous transformation rarely occur to giant lipomas. Some reports have suggested that large tumours (>10 cm) are more likely to contain sarcomas, which makes a preoperative biopsy advisable in such cases. The intramuscular location of a lipoma is also considered to be a risk factor for malignancy [36].

It is important to differentiate giant lipomas from liposarcomas, malignant fibrous histiocytomas and other benign soft-tissue lesions, such as old muscle rupture, epidermoid cysts, angiolipomas, deep hemangiomas and lipoblastomatosis. Indeed, the main concern in the diagnosis of giant lipomas should be the exclusion of malignancy. It has been suggested that a lesion should be considered a liposarcoma when a fatty subcutaneous tumour is more than 10 cm in diameter and has grown rapidly in recent months [36].

Diagnosis is primarily clinical, but malignancy has to be ruled out. In addition MRI can help to make diagnosis and plan for surgery [16]. Features that suggest malignancy include old age, large size, presence of thick septa, presence of nodular and/or globular or non-adipose mass-like areas, and decreased percentage of fat composition. Johnson et al suggested that any soft tissue tumour that is greater than 5 cm, should be considered malignant until proved otherwise. In our case, the size of the tumour was >5 cm, but histopathology revealed a benign lesion [36].

Surgical excision is the treatment of choice because these large tumours may undergo malignant transformation. As giant lipomas usually have a well-defined pseudo-capsule, the dissection is relatively straight forward. However, our case was more complicated, due to infiltration of striated muscle fibres, which cause tenacious adhesions between the lipoma and the muscles [5].

Liposuction for the treatment of giant lipomas has also been reported [20,23]. However, as differential diagnosis between lipomas and liposarcomas is exceedingly difficult on the basis of clinical findings alone [36]. We think that liposuction of large lesions should be avoided, especially those that have grown rapidly in recent months. Moreover, it's very difficult that the liposuction alone can remove completely the mass, and, in addition the recurrence rate is greater [23].

The presentation of a long-standing giant lipoma may resemble a malignant lesion. Surgical excision is the treatment of choice to alleviate the symptoms and the apprehension of malignancy and provides tissue diagnosis.

Conclusion

A giant lipoma is a lesion, at least, 10 cm in diameter or weighs1000 g, the aetiology is not yet known. In the literature have been reported some cases of very large lipomas, even if these kind of tumours are extremely rare. It is important to differentiate giant lipomas from liposarcomas, malignant fibrous histiocytomas and other benign soft-tissue lesions; the diagnosis is primarily clinical, but malignancy has to be ruled out. In addition MRI can help to make diagnosis. Surgery is the treatment of choice because these large tumours may undergo malignant transformation.

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