Case Report

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Uncommon presentation of a giant psoas muscle lipoma: a case report and brief literature review

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Abstract

Giant retroperitoneal lipomas, particularly within the psoas muscle, are a rare condition. We herein present one such case of a 45-year-old Italian man and a literature review. There are only two case reports published in the literature, thus posing challenges for the appropriate diagnosis and treatment. Our patient was admitted to the emergency department with colicky abdominal pain. Computerized tomography (CT) with contrast enhancement revealed kidney stones and a 19.5 × 13.6 × 18 cm mass of adipose tissue with septa located in the right retroperitoneum, in close continuity with the right psoas major muscle. Magnetic resonance imaging showed a voluminous neoformation with predominantly adipose content and a compressive effect on adjacent vascular structures. The CT-guided biopsy indicated spindle cell mesenchymal neoplasm, not otherwise specified. Surgical resection of the retroperitoneal mass with the capsule was performed, and a histopathology examination confirmed the diagnosis of spindle cell lipoma. Despite the fact that CT and MRI are the main diagnostic tools, this case report emphasizes the need for a CT-guided core needle biopsy prior to surgery for appropriate diagnosis.

Keywords: case report, lipoma, psoas muscle, retroperitoneal, surgery

Introduction

Lipoma, defined as a benign proliferation and collection of adipocytes, is the most common soft tissue tumor in adults[1]. Although it has been linked to several risk factors, such as genetic abnormalities, posttraumatic events, obesity, liver disease, alcohol abuse, or glucose intolerance, the etiology remains still unclear[2]. Deep-seated lipomas, in particular those originating in the retroperitoneal space, are less common and larger than subcutaneous lipomas[3]. Intramuscular lipoma is an uncommon variant that accounts for less than 1% of all lipomas and may occur in any anatomical site, mainly at the age of 40–70 years old[4].

HIGHLIGHTS

- There are only two cases of lipoma of the psoas muscle published in the literature.
- This is the first case report reporting a huge lipoma of the psoas muscle of 19.5 × 13.6 × 18 cm.
- Alongside computed tomography and MRI, a computed tomography-guided fine-needle aspiration biopsy is necessary prior to surgery for appropriate diagnosis.

The preoperative diagnosis remains still a challenge due to difficulties in differential diagnosis with lipoma-like well-differentiated liposarcoma (WDL). Radiological findings in MRI or computed tomography (CT) and CT-guided fine-needle aspiration biopsies (FNABs) help to indicate the appropriate treatment approach[5].

Nevertheless, intramuscular lipomas of the psoas muscle are uncommon; therefore, we conducted a literature review to understand their incidence, diagnosis and treatment approach, and additionally, we present the case of a giant lipoma of the psoas muscle.

The case report has been reported in line with the Surgical CAse REport (SCARE) Criteria[6].

Presentation of the case

Patient information

On 31 May 2021, a 45-year-old Italian man was admitted to the emergency department with acute colicky abdominal pain. He denied experiencing any nausea, loss of appetite, or even change in bowel habits or urinary frequency. The patient had

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no significant past medical history except right urolithiasis, and he was not on medications. The patient has referred no allergies or other physical impairment and no noteworthy family history. He was a former smoker who had stopped smoking nearly 18 years ago. The patient's weight was 82 kg, without any weight loss, and the height was 172 cm, with BMI = 27.7 kg/cm^2, within the overweight category. On physical examination, the abdomen was soft without palpable masses or signs of peritonitis.

Clinical findings and diagnostic assessment

Full blood count, coagulation factors, glucose level, electrolyte panel, and liver and kidney function tests were within the normal range. CT with contrast enhancement, performed on the same day, revealed kidney stones and a $19.5 \times 13.6 \times 18$ cm mass heterogeneously hypodense composed mainly of adipose tissue with some septa and some solid hyperdense node inside, located in the right retroperitoneum, in close continuity with the right psoas major muscle (Fig. 1). The patient, after treatment with a double J stent for urolithiasis, was discharged from the emergency department and proceeded with further diagnostic examinations for the newly identified mass.

An MRI of the upper abdomen, performed on June 2021, showed a voluminous neoformation with predominantly adipose content with a compressive effect on adjacent vascular structures, in particular on the inferior vena cava and right renal vein.

Afterward, the patient was evaluated at the Veneto Institute of Oncology, where a CT-guided biopsy was required for a complete diagnosis. It was performed on July 2021, indicating a 'spindle cell mesenchymal neoplasm, not specified, to be further defined at the definitive histological examination after resection' (Fig. 2). The immunophenotyping analysis reported CD34+, SMA−, desmin−, caldesmone−, S100−, MDM2−, STAT6, EMA−, KIT−, and DOG1−. The patient was adequately informed about the clinical findings and the need for a multidisciplinary discussion for the best treatment approach. Therefore, a multidisciplinary meeting, including oncologists, surgeons, anatomopathologists, and our sarcoma team, was held on August 2021, where conservative surgical resection was required, considering the following characteristics:

(1) the mass was within the fascia of the psoas muscle;
(2) imaging findings suggested a benign/low-grade malignity lesion; and
(3) the CT-guided biopsy was carried out in the main suspicious area.

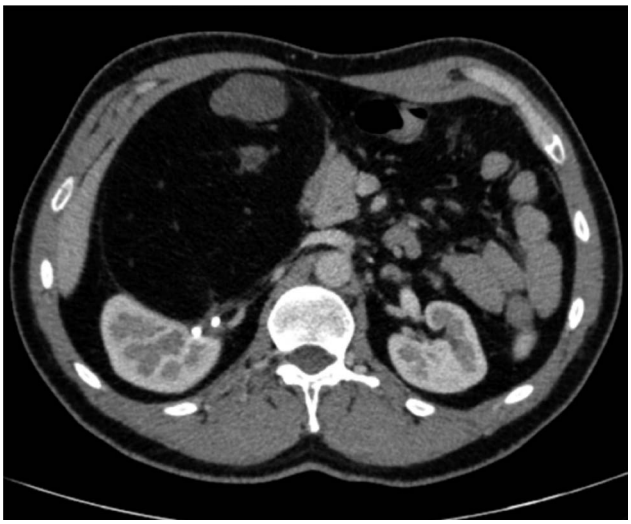

Figure 1. Computed tomography imaging: voluminous mass heterogeneously hypodense composed mainly of adipose tissue with some septa and some solid hyperdense node inside; located in the right retroperitoneum, close continuity with the right psoas major muscle.

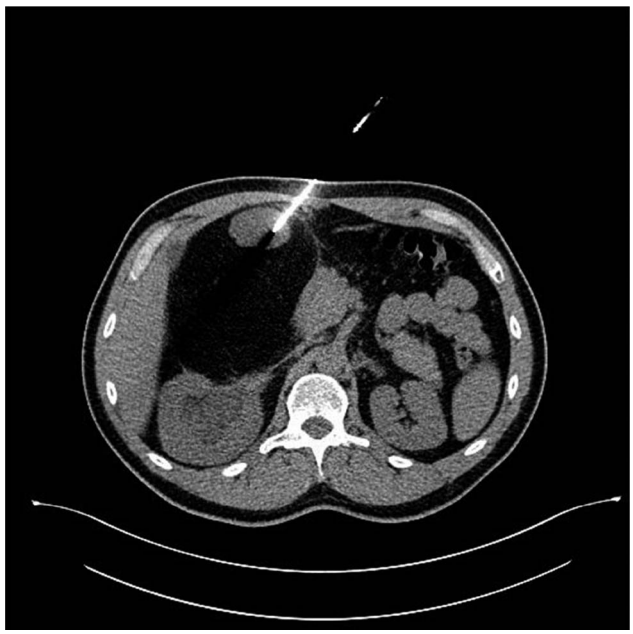

Figure 2. Computed tomography-guided biopsy. The tip of the needle is correctly positioned within the hyperechogenic solid node inside the adipose tissue mass.

Treatment

After completing the examinations and preoperative assessments, the patient underwent an exploratory laparotomy on November 2021. A bulky yellowish tumor was found to occupy the right retroperitoneum until the right iliac fossa, inside the left psoas major muscle. Our team at Veneto Institute of Oncology performed en bloc resection with the capsule of the retroperitoneal mass, preserving the femoral nerve (Fig. 3).

The mass was excised completely and the final histopathology examination confirmed the diagnosis of spindle cell lipoma (MDM2−, CD34+, STAT6−, desmin−, and Rb without nuclear expression), as shown in Figure 4. There were no complications during the intervention, it was well-tolerated and the postoperative course was uneventful, based on clinical examination and the patient was discharged on the 7th postoperative day. Healthy lifestyle behavior recommendations – dietary and ambulatory psychological support were provided. Clinical follow-up was performed after 1, 4, and 8 months. At the follow-up MRI after 8 months, the patient showed no local recurrence.

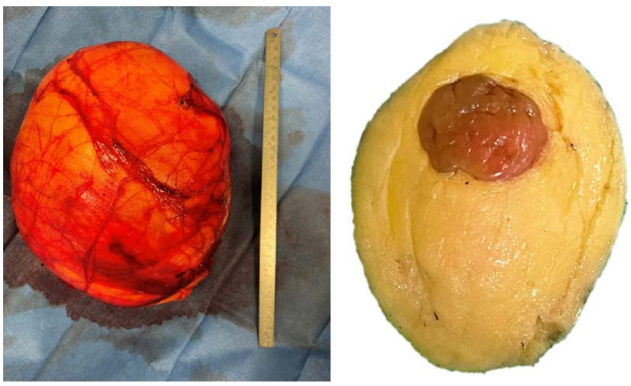

Figure 3. Macroscopically imaging of the mass resection.

Literature review

A literature search was conducted in PubMed using the search query ("Lipoma"[Mesh] AND "psoas muscle") to retrieve articles on psoas muscle lipoma published until 30 June 2022. No additional filters were applied. Three articles were identified and screened by title and abstract. Two articles were retrieved: one in Italy in 1999[7] and the other one in Turkey in 2007[8]. However, neither the abstract nor the full text of the Italian article by Salzano *et al*.[7] was not available. Therefore, only the article by Battal *et al*.[8] was included in this literature review. It reported the case of a 65-year-old male with hematuria, dysuria, and low back pain, with a $3.5 \times 4 \times 12$ cm mass revealed on CT, which was excised completely.

Discussion

Psoas muscle lipomas are an uncommon lipoma subtype, given that only two articles have been published in the literature[6,7].

As in our case, patients with retroperitoneal intramuscular lipomas most likely do not experience pain or symptoms for a long time until the mass shifts the adjacent soft tissues or peripheral nerves[4]. The initial diagnosis is based on imaging examinations, such as CT or MRI, as MRI is crucial in distinguishing fat-containing tumors from other soft tissue tumors and among lipomatous masses as well[8]. Currently, the disease recurrence rate has been considered very low, mostly due to incomplete removal during surgery, attributable to the proximity of the tumor to important anatomical structures.

However, considering that increased age, male gender, poor clinical presentation, and large tumor size (>10 cm) have been reported as the risk factors of malignancy[9], hystological examination is fundamental for the differential diagnosis. The latter remains still unclear, in particular between intramuscular lipoma and WDL, especially when the neoformation is large and deep-seated. MRI or CT imaging, along with percutaneous biopsy, are considered sufficient for diagnosis, given that the surgical approach, both for lipoma and WDL, is the same: complete surgical excision with the capsule. However, in the case of retroperitoneal mass, if the MRI and biopsy, considered as first-line diagnostic approach, indicate lipoma or WDL, it must opt-in for en block excision, as for high-grade sarcomas.

Despite the fact that CT and MRI are the main diagnostic tools, this case report emphasizes the need for a CT-guided FNAB prior to surgery for appropriate diagnosis. Although the treatment of choice is surgical resection, nevertheless, it depends on the tumor location, size, and clinical symptoms.

To our knowledge, this is the first attempt to report a lipoma of the psoas muscle with such dimensions. Given the limited knowledge on this topic, as reported in the literature review, describing the diagnosis and treatment approach, we might contribute to helping surgeons and clinicians dealing with such pathologies for a better diagnosis, management, and follow-up.

Conclusion

In conclusion, a giant of the psoas muscle is a rare condition, given that this is the first report with such dimensions and, in general, there are only two case reports published in the literature. The appropriate diagnosis and treatment remain still challenging;

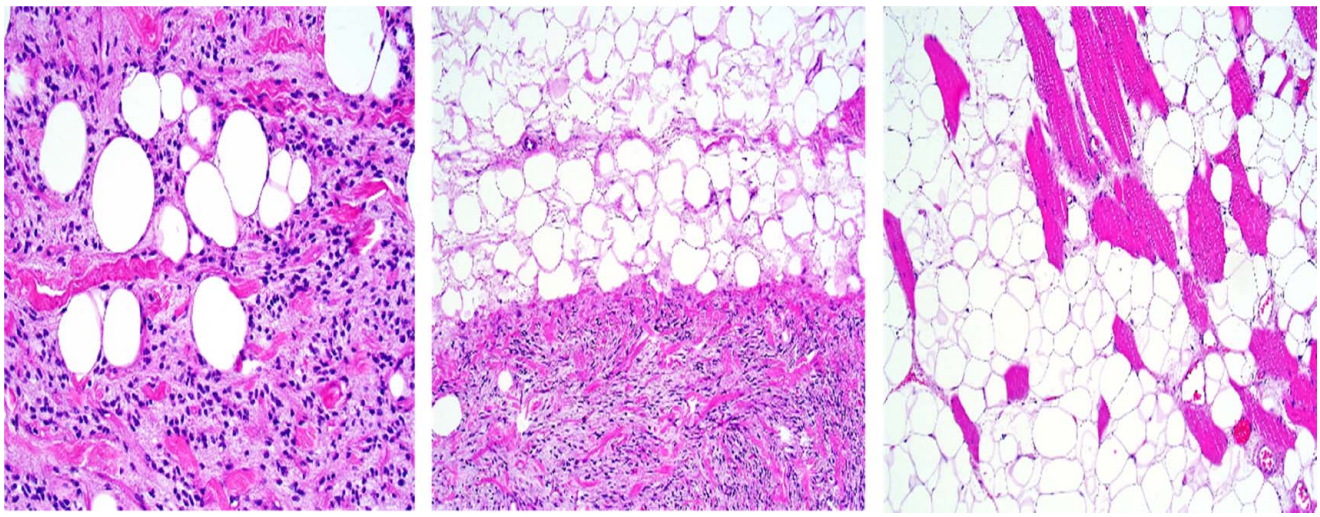

Figure 4. Histopathological analysis indicated spindle cell lipomas.

hence alongside CT and MRI, a CT-guided FNAB should be a main diagnostic tool prior to surgery.

Ethical approval

This case report is exempt from ethical approval.

Patient consent

Written informed consent was obtained from the patient to publish this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

M.R. conceptualized the case report; M.R. and I.H. wrote the case report; M.S. provided the pathology images and interpretation; A.D.M. provided the radiology imaging and interpretation; S.T. and M.M. supervised as the attending physicians in the care of this patient; M.M., B.C., and P.D.F. reviewed and approved the report's final version.

Conflicts of interest disclosure

All the authors declare no conflicts of interest.

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