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Case Report **General Surgery**

Primary Pleomorphic Leiomyosarcoma of the Abdominal Wall Rich in Osteoclast-Like Giant Cells: A Rare Case Report

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Abstract

Leiomyosarcoma is a rare malignant tumor originating from smooth muscle cells, most commonly affecting the uterus, retroperitoneum, and extremities, while primary involvement of the abdominal wall is exceptionally uncommon. We report the case of a 55-year-old woman who presented with a progressively enlarging mass on the left abdominal wall over six months. Imaging studies revealed a 10 × 3.9 × 13 cm well-defined lesion arising from the external oblique muscle, without intra-abdominal extension or distant metastasis. A core needle biopsy demonstrated spindle-shaped tumor cells with elongated, hyperchromatic nuclei and eosinophilic cytoplasm. Immunohistochemical analysis showed positivity for smooth muscle actin (SMA), h-caldesmon, vimentin, CD68, and CD45, and negativity for pancytokeratin (AE1/AE3), desmin, CD34, S100, myogenin, MDM2, and EMA, confirming the diagnosis of a pleomorphic leiomyosarcoma rich in osteoclast-like giant cells (FNCLCC grade III). The patient underwent wide local excision with tumor-free (R0) margins. She did not receive adjuvant radiotherapy due to financial constraints. Histopathological examination of the surgical specimen confirmed the diagnosis and clear resection margins. At six months of follow-up, there was no evidence of local recurrence or metastasis. This case highlights the rarity of primary leiomyosarcoma of the abdominal wall and underscores the importance of imaging, histopathology, and immunohistochemistry for diagnosis. Complete surgical excision with negative margins remains the mainstay of treatment, and long-term follow-up is essential due to the risk of recurrence and metastasis.

Keywords: Leiomyosarcoma; Abdominal wall; Soft tissue sarcoma; Smooth muscle tumor; Surgical excision; Case report.

INTRODUCTION

Leiomyosarcoma is a rare malignant neoplasm [1, 2]. Arising from smooth muscle cells, in decreasing frequency, leiomyosarcoma predominantly involves the uterus, the retroperitoneum, the extremities, and the trunk [1]. Abdominal wall leiomyosarcoma had only been reported in a few cases [3]. We are still unsure what the genetic defects in leiomyosarcoma are and how complex they are. A known major risk factor for soft tissue sarcoma (STS) is previous exposure to ionizing radiation (including radiotherapy), especially during youth [3].

The clinical presentation of the leiomyosarcoma is heterogeneous and is site-dependent [4]. Diagnosis and extent of the mass can be evaluated with computed tomography scans and magnetic resonance imaging [5]. However, confirmation is not done without histology, thus a need to perform a core needle biopsy [6].

CASE REPORT

A 55-year-old female patient with an unremarkable medical history presented with a giant mass that had been growing gradually during the past six months on the left side of the abdominal wall without accompanying signs.

The physical examination revealed a smooth, round, painful, and fixed mass measuring 13 cm in diameter located on the left side of the abdomen. It also presented skin inflammation and central skin ulceration.

A thoracic and abdominopelvic computed tomography (CT) revealed a well-circumscribed, homogeneously contrast-enhancing mass on the left

anterolateral abdominal wall, developing from the external oblique muscle, and measuring 10x3.9x13 cm (Figure 1). This mass is in contact with the left anterior superior iliac spine, without intra-abdominal extension, and there is no evidence of metastases to distant organs.

A magnetic resonance imaging (MRI) of the abdominal soft tissues was performed and revealed a parietal lesion of the left abdominal wall, originating from the internal and external oblique muscles. It presents a solid-cystic pattern and extends to the left anterior superior iliac spine.

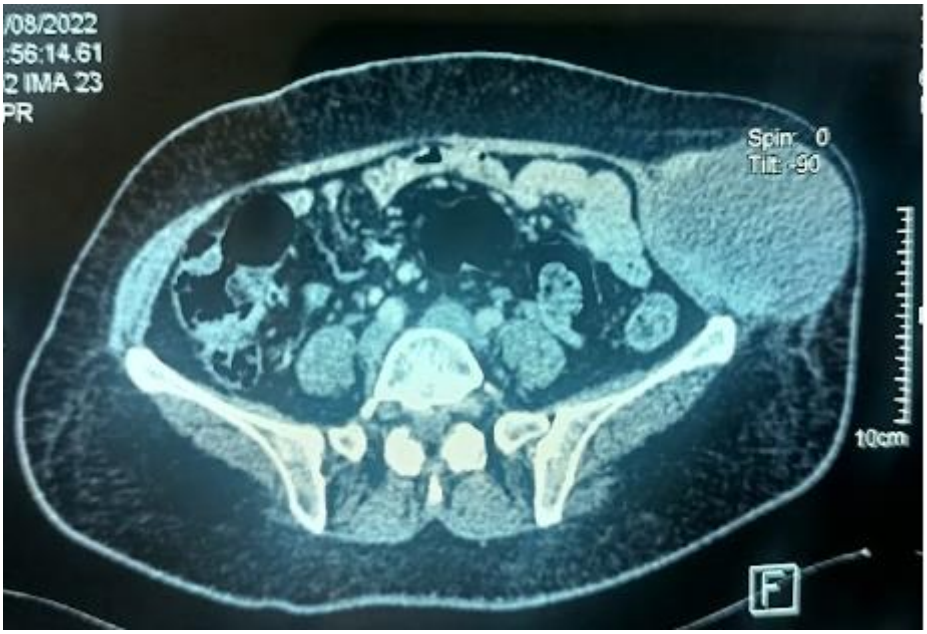

Figure 1: Abdominal CT showing a well-circumscribed homogeneously contrast-enhancing mass on the left anterolateral abdominal wall

A core needle biopsy was performed, revealing spindle-shaped cells with elongated, hyperchromatic nuclei, abundant eosinophilic cytoplasm, and the presence of osteoclast-like giant cells (Figure 2)

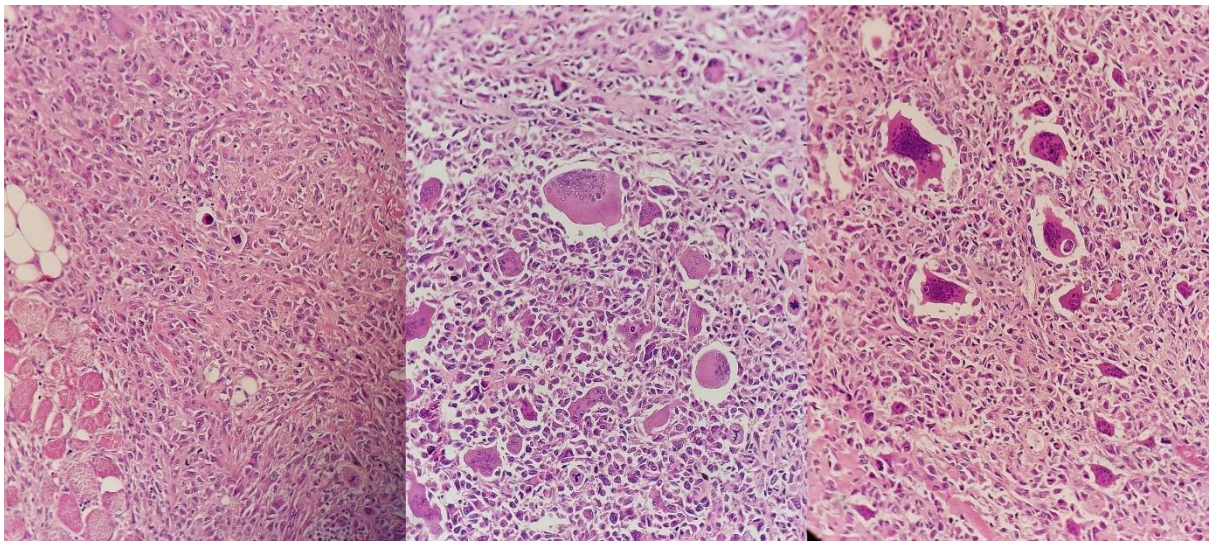

Figure 2: Spindle-shaped tumor cells with elongated hyperchromatic and the presence of osteoclast-like giant cells nuclei in core needle biopsy of abdominal wall leiomyosarcoma

Immunohistochemical analysis showed that the tumor cells expressed smooth muscle actin (SMA), h-caldesmon, vimentin, CD68, and CD45, while they were negative for pancytokeratin (AE1/AE3), desmin, CD34, S100, myogenin, MDM2, and EMA.Based on these findings, the diagnosis of a pleomorphic leiomyosarcoma rich in osteoclast-like giant cells, FNCLCC grade III, was established (Figure 3).

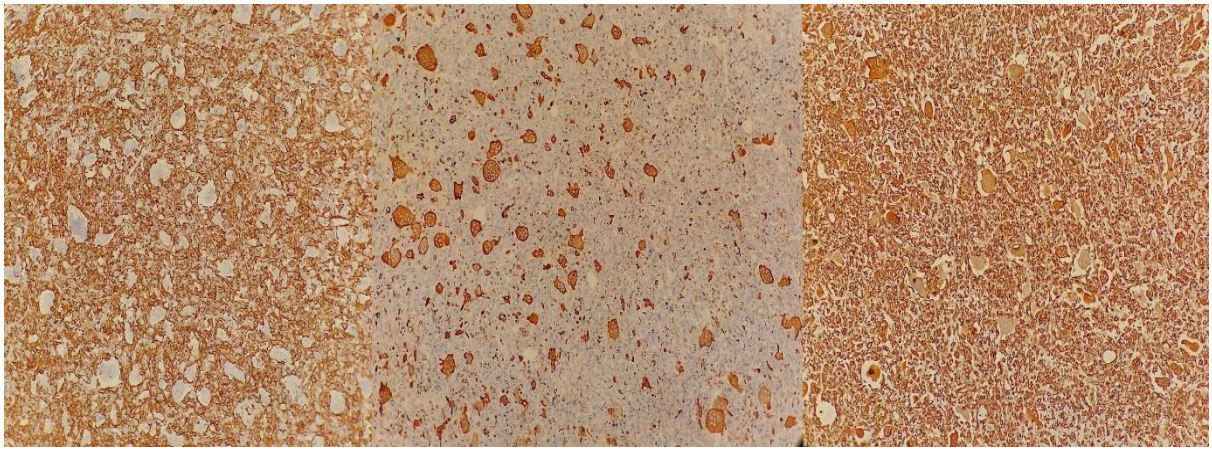

Figure 3: Immunohistochemical staining demonstrating expression of smooth muscle actin (SMA), vimentin, and CD68 in tumor cells of abdominal wall leiomyosarcoma

After discussing the case in a multidisciplinary consultation meeting, we decided to perform a large tumor excision with clear surgical margins (Figure 4). We resected the tumor and the invaded part of the external and internal oblique muscles as well as the surrounding skin.

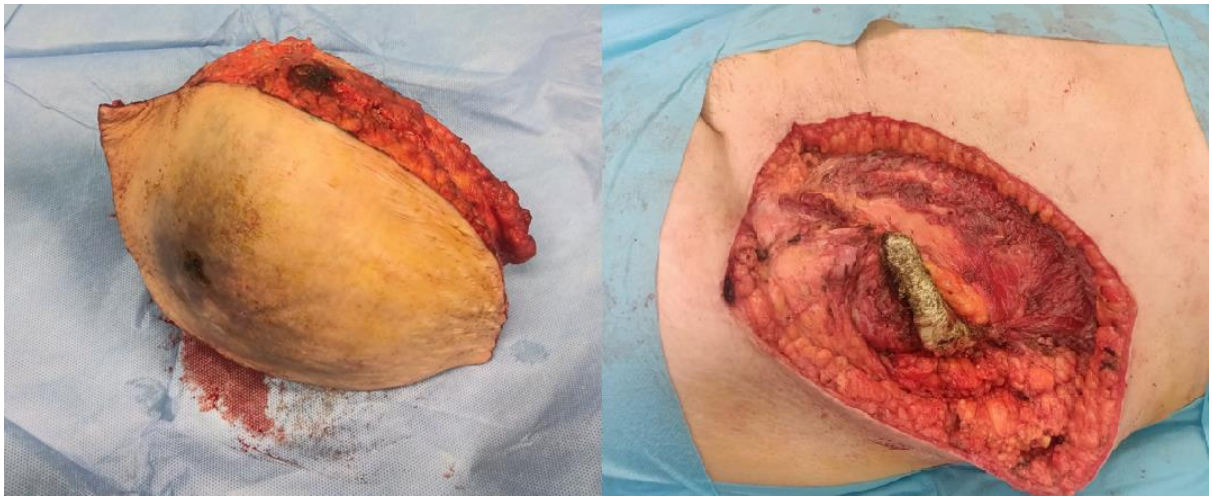

Figure 4: Intraoperative image showing excision of abdominal wall leiomyosarcoma with clear margins

The histological and immunohistochemical examination of the surgical specimen confirmed the diagnosis of a pleomorphic leiomyosarcoma rich in osteoclast-like giant cells, with tumor-free surgical margins.

The patient could not afford radiation therapy, so we conducted close observation at three-month intervals. No recurrence after six months of surgery was detected.

DISCUSSION

Leiomyosarcoma is a common subtype of soft tissue sarcoma (STS), accounting for up to 10% to 20% of all sarcomas [1]. The retroperitoneum and uterus are most commonly involved, and less often, the extremities and trunk [1]. The incidence of leiomyosarcoma affecting the anterior abdominal wall is rare [3]. In this particular case, a 55-year-old woman presented with a giant (10x3.9x13 cm) leiomyosarcoma of the abdominal wall.

The clinical presentation of leiomyosarcoma is highly variable [4]. If a leiomyosarcoma is suspected, an image-guided core needle biopsy is necessary for diagnosis [6]. A chest and abdominal CT scan is mandatory [4, 8]. Initial imaging methods to define the extent of the lesion include computed tomography (CT) scans and magnetic resonance imaging [5].

Histologically, leiomyosarcoma is characterized by spindle-shaped cells arranged in fascicles with elongated and hyperchromatic nuclei and abundant eosinophilic cytoplasm [1].

Immunohistochemical analysis plays a key role in diagnosis confirmation and in the case of undifferentiated tumors, where the cell of origin is unclear. Smooth muscle-specific markers are the most sensitive marker. p16 and p53 with a high Ki-67

proliferation index can be useful for differentiating leiomyosarcoma and leiomyoma [9].

Leiomyosarcoma management necessitates a multidisciplinary strategy. It depends on the tumor site, size, grade, and patient-dependent factors. The potential options include wide surgical resection with 3 to 5 cm surgical margins, radiation, and chemotherapy [4, 7].

The objective of surgery for Leiomyosarcoma of the trunk or extremity is to achieve a R0 resection. An R1 or R2 resection is permissible despite the elevated risk of recurrence, metastasis, and potentially lethal illness [10, 11]. Perioperative radiation is the standard for extremity and trunk localization. The use of chemotherapy remains a subject of discussion [12].

The most important prognostic factors are tumor size, excision margins, depth, and histologic grade [13]. The local recurrence rate may reach 40% to 60%, and the rate of metastasis is 20% to 40%. Consequently, prolonged patient follow-up is essential [2, 14].

CONCLUSION

Leiomyosarcomas are rare, aggressive malignant tumors derived from smooth muscle cells. About 16% of cases occur in the trunk. Their clinical presentation varies according to the site of origin. When a sarcoma is suspected, management should involve a multidisciplinary team. Image-guided core needle biopsy is essential for establishing the diagnosis. Surgical resection is the primary treatment, while radiotherapy and chemotherapy may be used in selected cases. Early diagnosis and well-planned therapy are key factors for improving prognosis.

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