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FAT AND FURIOUS: THE CASE OF AN AGGRESSIVE LIPOSARCOMA

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Abstract
Dedifferentiated liposarcoma (DDLPS) is a rare subtype of retroperitoneal sarcoma (RPS) arising from mesenchymal tissue, commonly in fat-rich regions such as the retroperitoneum. We present a case of DDLPS in a 61-year-old male who presented with an abdominal mass, weight loss, and anorexia. Surgical management involved complete tumor excision with right radical nephrectomy. Histopathology and immunohistochemistry revealed MDM2-positive dedifferentiated liposarcoma, with a probable origin from the perirenal fat pad. This case underscores the challenges in diagnosing and managing RPS and highlights the importance of histological and molecular diagnostics in guiding treatment.

INTRODUCTION

Retroperitoneal sarcomas (RPS) account for less than 1% of all malignancies and approximately 15% of all soft tissue sarcomas[1]. Among these, dedifferentiated liposarcoma (DDLPS) is an aggressive subtype that often originates in fat-rich regions such as the retroperitoneal space[2]. These tumors are typically large at presentation due to their deep location, and symptoms such as abdominal pain, anorexia, and weight loss are nonspecific[3]. Surgical resection with clear margins remains the cornerstone of treatment, although recurrence rates are high even after optimal management[4].

DDLPS is characterized histologically by the presence of high-grade dedifferentiated areas and a molecular hallmark of MDM2 gene amplification[5]. This case report discusses the diagnostic and therapeutic challenges of managing a large DDLPS with probable origin from the perirenal fat pad.

Case Presentation

Patient History

A 61-year-old male presented with a gradually enlarging abdominal mass over four months, associated with anorexia and weight loss. He denied fever, gastrointestinal symptoms, or urinary complaints.

Physical Examination

A firm, bosselated, non-tender abdominal mass measuring approximately 20 × 15 cm was palpable, extending from the lower border of the liver to the right iliac fossa. No signs of inflammation, ascites, or lymphadenopathy were noted.

Imaging Findings

CT imaging revealed a large, heterogeneous retroperitoneal mass involving the right renal area, displacing surrounding organs but sparing the inferior vena cava (IVC) and major vessels. There was no evidence of metastasis[6].

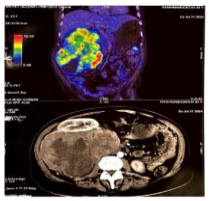


Fig. 1: PET CT image- Large, heterogenously enhancing, hypermetabolic retroperitoneal mass posterior to right kidney.

Fig. 2: The lesion displaces the liver anteriorly with indistinct intervening fat planes, the mass extends under the right diaphragm posterior to liver.

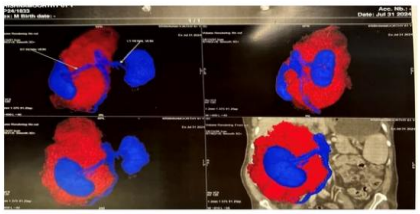


Fig. 3: Mass is supplied by branches from right renal artery. Two right renal arteries are visualized. Single left renal artery is visualized

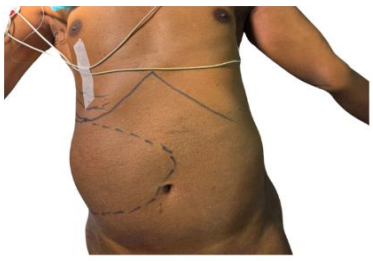
Surgical Procedure

The patient underwent exploratory laparotomy with the following steps:

1. A vertical midline incision was made.
2. The right colon was mobilized, and Kocherization of the duodenum was performed to expose the tumor.
3. The IVC was identified and mobilized to isolate the right renal artery and vein, which were skeletonized and ligated.
4. The tumor, adherent to the diaphragm and psoas muscle, was dissected carefully. A diaphragmatic rent was repaired with 2-0 Prolene sutures.
5. A right radical nephrectomy was performed, and the tumor was excised in toto.
6. Hemostasis was achieved, and a 32F ICD tube was placed for postoperative drainage.

Intraoperative Findings

- Tumor dimensions: 22 x 15 x 11 cm , weighing 5 kg.
- Likely origin: Perirenal fat pad.
- Tumor infiltration: Superficial fibers of the diaphragm and psoas muscle.
- Structures spared: Renal vessels, IVC, and duodenum.
- No evidence of metastases, ascites, or lymphadenopathy.



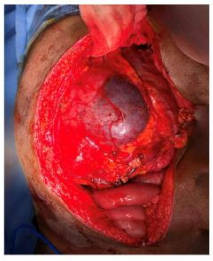


Fig. 4: Pre op image

Fig. 5: Intraoperative image showing the retroperitoneal sarcoma encassing the kidney.

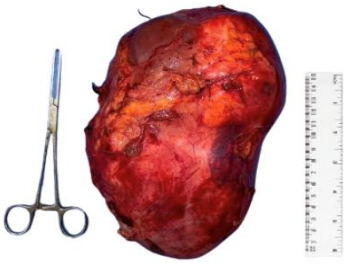


Fig. 6: Retroperitoneal sarcoma specimen

Histopathology and Immunohistochemistry

Microscopic Findings

Histopathological examination showed a neoplasm composed of cells arranged in short fascicles, whorls, and storiform patterns. Tumor cells displayed moderate eosinophilic cytoplasm, pleomorphic nuclei with coarse chromatin, distinct nucleoli, bizarre cells, and multinucleated tumor giant cells. Mitosis was noted at 3–4 per 10 high-power fields[7]. The stroma exhibited focal congestion and edema.

IHC Findings

Immunohistochemistry revealed strong positivity for MDM2, confirming the diagnosis of dedifferentiated liposarcoma[8].

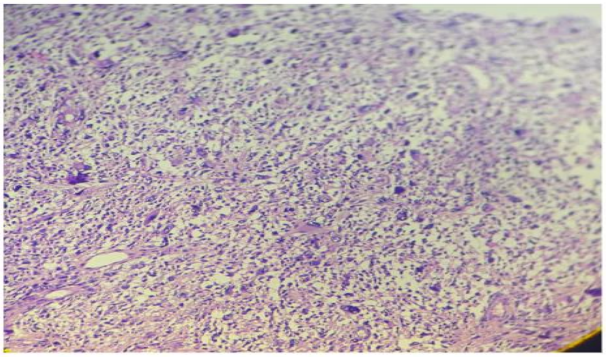


Fig. 7: IHC is positive for MDM2 suggestive of dedifferentiated liposarcoma

DISCUSSION

Dedifferentiated liposarcoma is an aggressive sarcoma subtype frequently associated with MDM2 amplification[9]. It arises from adipocytic tissue, with the perirenal fat pad being a potential site of origin in this case[5]. Surgical resection with clear margins is crucial for local control, as incomplete excision significantly increases recurrence risk[10]. Despite optimal surgery, DDLPS is associated with high rates of local recurrence, necessitating close follow-up with imaging[11].

Adjuvant therapies such as radiotherapy or systemic treatment may be considered, particularly in cases with close margins or recurrent disease[12]. Multidisciplinary management in specialized centers improves outcomes for these challenging tumors[13].

CONCLUSION

This case highlights the importance of integrating histopathological and molecular diagnostics in managing retroperitoneal sarcomas. The probable origin of the tumor from perirenal fat emphasizes the role of detailed anatomical evaluation during surgery. Complete excision with negative margins remains the cornerstone of treatment, supported by long-term follow-up to monitor recurrence.

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