Retroperitoneal liposarcoma as etiology of abdominal pain. Case report and literature review

Yisvanth Pérez-Ponce,* Raúl Castellanos-Alejandre,** J. Francisco Guerrero-Romero,*** Felipe Estrada-León,**** and Alfonso Torres-Lobatón*****

Abstract

Soft tissue sarcomas are very uncommon types of tumors, with their embryological origin in the mesoderm and in nerve structures of the neuroectodermic layer. They represent only 1.5% of cases in the National Registry of Malignant Tumors in Mexico. They can be encountered anywhere connective soft tissue is found. Because of their specialized localization, retroperitoneal soft tissue sarcomas have a propensity to remain asymptomatic for long periods of time and reach a large size before being diagnosed. The only accepted treatment is wide surgical excision with clear margins, without a clear benefit for adjuvant treatment. The very uncommon nature of these tumors and their varied histopathology, site and behavior classify them as a difficult entity in terms of treatment. We present here the case of a 66-year-old female with a left-side retroperitoneal tumor, complaining only of vague abdominal pain as the presenting symptom. A CT-guided needle biopsy reported a tumor histology. The patient was subjected to laparatomy with complete resection of the tumor (30×13×10 cm). Histopathological report demonstrated a low-grade retroperitoneal sarcoma and free macroscopic and microscopic borders, without obvious invasion except for left kidney and ureter. The patient refused adjuvant treatment, and she is disease-free 7 years after treatment. Retroperitoneal sarcomas can cause pain and reach very large sizes. The best treatment available is wide surgical resection with clear margins. The most important prognostic factors are free margins, type of resection, age of patient and tumor histology.

Key words: retroperitoneal liposarcoma, wide resection, soft tissue.

Resumen

Los sarcomas de partes blandas son tumores infrecuentes, se desarrollan de tejidos originados del mesodermo embrionario y de los nervios del neuroectodermo, representan el 1.5% de las neoplasias malignas de acuerdo al registro histopatológico de neoplasias en México. El retroperitoneo es de los sitios de presentación menos frecuentes; pero logran alcanzar grandes dimensiones e infiltrar estructuras adyacentes al momento del diagnóstico. La resección quirúrgica tridimensional con márgenes libres de tumor constituye la base de la terapéutica. Se debe individualizar el tratamiento en relación a la extensión, los márgenes, el grado de diferenciación para ofrecer el tratamiento óptimo. Se presenta el caso de paciente femenina de 66 años de edad con tumor retroperitoneal asociado a dolor abdominal vago y mal definido, como síntoma motivo del ingreso para protocolo de estudio. La biopsia guiada por TAC se reportó compatible con sarcoma. Se realizó laparotomía exploradora con resección de un tumor de 30×13×10 cm y del riñón y uréter izquierdo en continuidad, con bordes macroscópicos y microscópicos libres de tumor. El reporte patológico fue de liposarcoma retroperitoneal de bajo grado de malignidad. La paciente no aceptó adyuvancia y se ha mantenido en control 7 años sin evidencia de actividad tumoral. Los sarcomas RP son causa de dolor abdominal, sus características permiten alcanzar grandes dimensiones. La opción actual del tratamiento sigue siendo la cirugía, y la edad, el tipo de resección, así como el grado de diferenciación, son los factores más útiles para sobrevida y recurrencia.

Palabras clave: liposarcoma retroperitoneal.

Introduction

Soft tissue sarcomas are rare, representing only 1% of the malignant neoplasias. They originate in the skeletal and extraskeletal connective tissue, including nerves,1 having in common their embryological origin of the primitive mesoderm and neuroectodermic nerves. For this reason they are capable of presenting throughout most of the body wherever connective soft tissue is found.2 Their rarity, variety of histological origins and presentation make their study and treatment approach very interesting.3,4

In the U.S. almost 6000 new cases are diagnosed annually, constituting <1% of the occult tumors and ~7% of the malignant tumors in children. In Mexico, according to the last histopathological registry of neoplasias (2001),3 tumors of the soft tissue represent...
1.5% of all cases with a variable distribution as follows: 50% (extremities), 15% (trunk), 15% (retroperitoneum), 14% (viscera) and 11% in other locations. In the retroperitoneum, sarcoma can reach large sizes and remain occult, given the anatomic characteristics of its behavior. For these reasons, their clinical manifestation tends to be delayed. Once there is clinical suspicion, appropriate studies should be carried out to determine optimum therapy. Surgery continues to offer the best treatment option for these cases.

The purpose of this study is to present a clinical case with good survival and to review the literature of this pathology.

**Clinical Case**

We present the case of a 66-year-old female without significant medical history relating to her actual ailment. She presented with nonspecific, not well-defined abdominal pain of 3 months duration. Pain was non-radiating and predominantly in the left flank. It was unrelated to intake of food, and there were no exacerbing or attenuating causes. Fever was not present; the pain was unrelenting and spontaneously limited and did not affect the patient’s general health status. The patient sought emergency service for persistence of “feeling poorly” and pain of 4 h duration at the time of her first evaluation.

Physical examination revealed a female whose appearance was age-appropriate. The patient was conscious and oriented and ambulated without antalgic gait. Cardiopulmonary status was without compromise, and there was no tachycardia or fever. The
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The patient’s abdomen demonstrated soft, depressible grade 3 panniculus without signs of peritoneal irritation. A semi-firm, not well-defined, freely movable mass, ~20 cm in diameter, is identified in the left flank. There is discrete pain on physical exploration without organomegaly, presence of peristalsis, and no bruits. The inguinal region is without aponeurotic defects. Gynecological exam was negative. Extremities were symmetrical. Temperature was normal, with color and pulses present and symmetrical up to pedal pulses. Distal sensation was preserved.

Laboratory studies revealed hemoglobin of 15 g/dl, platelets 163 × 10³, leukocytes 7890, monocytes 81%, lymphocytes 13%, glucose 97 mg/dl, urea 24, creatinine 0.9 mg/dl, BUN 11 mg/dl, albumin 3.7 g/dl, total protein 7.3 g/dl, alkaline phosphatase 85 U, GOT 73 U/ml, GPT 51 U/ml, amylase 41 U/L, bilirubin 0.81 mg/dl, BD 0.37 mg/dl, LDH 190 U/ml.

Imaging studies were carried out. Plain film of the abdomen demonstrated displacement of loops towards the right side of the abdomen. Abdominal ultrasound (US) demonstrated well-defined solid tumor with echogenicity with different areas of sonographic shadows without calcification in the retroperitoneum (Figure 1). Chest x-ray demonstrated data in relation to chronic obstructive pulmonary disease and elevation of left diaphragm. Excretory urography showed inferior and medial displacement of the kidney with tortuosity of the left ureter (Figure 2). Computerized axial tomography (CAT) with and without contrast demonstrated retroperitoneal tumor extending from the left subdiaphragmatic area to the pseudopelvis with >75% fat, heterogeneous with nodular nucleus, defined borders and without infiltration of adjacent tissues. No calcifications or adenopathies are appreciated. The greater vascular structures are apparently not involved (Figure 3). CT-guided extraperitoneal percutaneous biopsy with tru-cut histologically reported sarcoma.

The patient was subjected to exploratory laparotomy, identifying a retroperitoneal tumor with paravertebral involvement from level L4 to the left subdiaphragmatic area at the level of the left suprarenal gland. A well-delineated pseudocapsule with infiltration of left kidney and ureter was demonstrated.

Tumor resectability is evaluated, exploring the integrity of the large vessels (aorta and inferior mesenteric artery). No compromise was demonstrated, with extension towards bone structures from the midline and lateral and muscular wall. Complete en bloc resection was performed outside the pseudocapsule, and there was no apparent residual microscopic tumor. Markers were left to offer adjuvant therapy postoperatively. Dimensions of the specimen were 30.0 × 13.0 × 10.0 cm, and the specimen weighed 2.9 kg. It had a yellowish aspect with predominance of adipose tissue and multiple nodular nucleus of greater consistency. The lesion was well delineated with well-defined borders and the entire pseudocapsule showed no evidence of tears. Kidney and hilar vessels appeared normal (Figures 4 and 5).
Histopathological study with hematoxylin/eosin stain demonstrated adipose tissue constituted by abundant adipocytes, septated by variable connective tissue, with presence of nuclear atypia, hyperchromatism of the cells and important atypia of the stromal cells (Figures 6 and 7). The former was reported as low-grade liposarcoma with extrinsic compression of the kidney and ureter and without tissue infiltration. Patient’s immediate evolution was satisfactory. Oral feeding was initiated and adequate pain control was given. She was discharged from the hospital on the 5th postoperative day. The patient rejected adjuvant therapy. Currently she is being followed-up on an outpatient basis and no evidence of disease has been identified during the past 7 years using various imaging studies.

Discussion

Soft tissue sarcomas are rare tumors of mesenchymatous tissue with a variable composition. Clinical picture depends on anatomic location.6-9 They constitute 1% of solid tumors, and their retroperitoneal location is shown in 10-15% of all soft tissue sarcomas. The principal locations are the upper and lower extremities, trunk and retroperitoneum, with other sites being less frequent. Those with deep location, such as the case of retroperitoneal tumors, in general have a poor prognosis10 due to size and tumor infiltration at diagnosis. This site allows the tumor to grow before appearance of clinical manifestations.

The clinical picture of retroperitoneal tumors is insidious and nonspecific. Ill-defined, vague abdominal pain is reported in 40-60% of the cases. Other symptoms include neurological disease by direct extension or compression in ~30% as well as general symptoms that include weight loss, early satiety, nausea, vomiting, lower extremity varicosities and, less frequently, edema in between 10 and 20% of the cases.11

With much less frequency it may be associated with secondary intestinal obstruction or renal insufficiency due to urinary obstruction. It may be found as a new space-occupying lesion in 80-90% of the cases12 and be palpable in 45-75% on primary exploration.

Of the malignant retroperitoneal tumors, 42% are sarcomas and, of these, the most common histological types are liposarcoma and leiomyosarcomas.

Macroscopically, retroperitoneal sarcomas present a pseudocapsule composed of a margin of normal tissue (compression zone) and an external margin with edema and neoformation vessels (reactive zones), which allows the formation of tumor extensions within and through this capsule, giving rise to satellite lesions. Local recurrence is attributed to these lesions, despite apparent complete resection. Different from other locations, retroperitoneal sarcomas present several technical difficulties for resection. These difficulties may be due to the contiguity of vital structures, large vessels or great functional importance, limiting resectability and prognosis.

In all cases, complete tumor resection should be attempted because one factor for locoregional recurrence is related to the limits of resection. These can be complete, limited or incomplete. Surgical resection continues as the “gold standard” for treatment of these tumors because they are not sensitive to radio- or chemotherapy.13

The case we have discussed is interesting because of its manner of presentation with only diffuse, vague abdominal pain, making early detection difficult. At the time of diagnosis the lesion was already large and, as described by various authors, a palpable tumor mass is demonstrated in 80% of the cases associated with abdominal pain in up to 40%.14,15 Among the clinical picture of the manifestation of retroperitoneal sarcomas, there may be neurological compromise, vascular symptoms and unspecific vague gastrointestinal symptoms, as well as sensation of abdominal fullness and genitourinary symptomatology primarily associated with the compression and invasion of these structures within the tumor lesion.

It is necessary to confirm diagnosis in cases of retroperitoneal lesions and to establish the clinical stage of the tumor in order to evaluate surgical resection and to offer palliative therapy. Study protocol for patients with retroperitoneal tumors includes chest x-ray, ultrasound, CAT scan, nuclear medical resonance, and excretory urography.16 Tomography, particularly if performed with high-definition instruments and with oral and intravenous double contrast, continues being a very useful tool with the goal of determining dissemination by demonstrating specific characteristics suggestive of these lesions. Retroperitoneal sarcoma is mainly characterized by presenting as a predominantly solid heterogeneous mass with areas of liquefaction and frequent displacement of adjacent structures. CAT scan aids in the precise determination of heterogeneity, dimensions, sharp margins and borders, as well as the relationship of fat and tissue and the presence of calcification. Due to the location of the tumor mass under study, it points to the necessity of individualizing the protocol for each case. For example, if a suprarenal mass is suspected it is necessary to complement with laboratory studies that assist us in differentiating them. In summary, before a high-grade sarcoma is diagnosed, the study should be complemented with CAT scan of the chest to determine the presence of distant metastasis, especially in the abdomen, as well as metastasis to liver.17

Another use of CAT scan and US is that they allow us to perform percutaneous guided biopsies to confirm histological origin and its varieties. However, it is preferred to perform this biopsy percutaneously and extraperitoneally due to the possibility of dissemination at the time of the procedure, which would deteriorate and alter its management.18,19 However, the standard for diagnosis is histopathological study of the surgical sample.

We consider relevant in this case that preoperative diagnosis of sarcoma was reached by performing a puncture biopsy with tru-cut and control tomography, which allowed a type of elective surgery after knowing the limits of the tumor and the type of
extension. Even though cases of tumor dissemination have been described by using tru-cut needles, extraperitoneal biopsy continues to be recommended by different authors. This method also allows the clear determination of the histological origin, ruling out other types of tumors such as lymphomas and germinal cell tumors. In this way, an adequate therapeutic approach can be planned. This point remains controversial.

Immunohistochemistry and chromosomal study have been carried out to study soft tissue tumors and to differentiate them, which is important because of the aggressive nature of the tumors and because histological origin varies from one type to another.

Among the nuclear medicine studies, positron emission tomography (PET) has been recently integrated with 95% sensitivity and 75% specificity for detection of primary soft tissue tumors and along with 18FDG the figures are 100% and 76%, respectively, allowing differentiation between low- and high-grade sarcomas, clinical staging, identification of metastasis, follow-up of the case and evaluate treatment response, whether surgical or medical.

The type of approach for the resection of these tumors depends on the site of presentation to obtain adequate midline exposure and vascular control. Within the surgical options, our objective should be complete resection with adequate margins, representing a better prognosis. According to Lewis et al. a resection with these characteristics is equal to ~74% of microscopic tumor absence, meaning greater survival. To achieve this may require an en bloc resection where the adjacent structures involved are included within the retroperitoneal tumor structures, avoiding residual tumor for better prognosis. As with other authors, Shibata and Brennan confirm the presence of positive margins and survival found is the same as in non-surgical patients or where only a biopsy is performed. These authors only make an observation regarding low-grade sarcoma with incomplete resection vs. the non-surgical because the former improves symptoms and survival. An important factor is tumor recurrence. These retroperitoneal sarcomas have elevated percentages and apparently are related to transoperative management and to the intrinsic biology of the tumor and its subtype. Low-grade retroperitoneal sarcomas represent less possibility of recurrence but there may be local and, less frequently, distance metastasis, different from sarcomas of other sites such as the extremities, where death is due to the presence of distance metastasis. Nevertheless, sarcomas are metastatic to lung and liver with a frequency of 7, 15, and up to 34%, according to other authors.

Co-adjuvant therapy along with surgical treatment has not demonstrated specific and satisfactory benefits despite new modalities of actual chemotherapy agents. The most used are based on doxorubicin alone or with dacarbazine. Although the disease-free period increases and recurrences decrease, this response is found only in select patients with specific characteristics and varies according to age, grade and histological type. Radiotherapy is indicated when the margins are not adequate or there is residual tumor or recurrence. A limitation for radiotherapy continues to be morbidity of the neighboring organs due to their high sensitivity. Our patient did not accept radiotherapy, despite medical indications for decreasing the possibility of recurrence. However, at 7 years of follow-up there is no information suggestive of local or distance tumor activity.

Determining prognostic factors for retroperitoneal sarcoma are type of resection and margins free of residual tumor. Another important factor is the biological behavior of the tumor because at the time of the diagnosis there can be extension and/or involvement of adjacent structures that would limit its therapeutics. In general, a better prognosis is offered for female patients <45 years of age. Other factors have not demonstrated sustainable evidence on the survival of these patients.

In conclusion, the presence of retroperitoneal sarcoma is nonspecific and ill defined in many cases, without pointing towards diagnosis. High suspicion and appropriate physical examination allow the initial study approach for patients with this pathology. Adequate and complete surgical treatment without evidence of residual microscopic tumor is the best indication for optimal prognosis. The opposite factors represent poor prognosis. Aggressive treatment and en bloc resection may be required to achieve the surgical objective in these cases. We believe that survival in this case is related to the low-grade histology of the tumor and appropriate surgery, corroborated by means of histopathological study with free surgical margins. The vague form of presentation is in agreement with literature reports.

References