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ABSITE CORNER

Retroperitoneal sarcomas

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GENERAL INFORMATION

ABSITE CORNER is a section of OPUS 12 Scientist dedicated to brief topic reviews geared toward resident preparation for the American Board of Surgery In-Training Examination. Each quarterly edition of OPUS 12 Scientist will contain one or two condensed overviews, accompanied by a list of selected references. Resident contributions via regular article submission process are welcome, subject to Editorial Board and Section Editor approval.

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RETROPERITONEAL SARCOMA

Retroperitoneal sarcomas (RS) represent approximately 15% of all sarcomas and approximately 33% to 55% of all retroperitoneal tumors. The most common variants of RS include liposarcoma (40%), leiomyosarcoma (30%) and malignant fibrous histiocytoma (<10%).

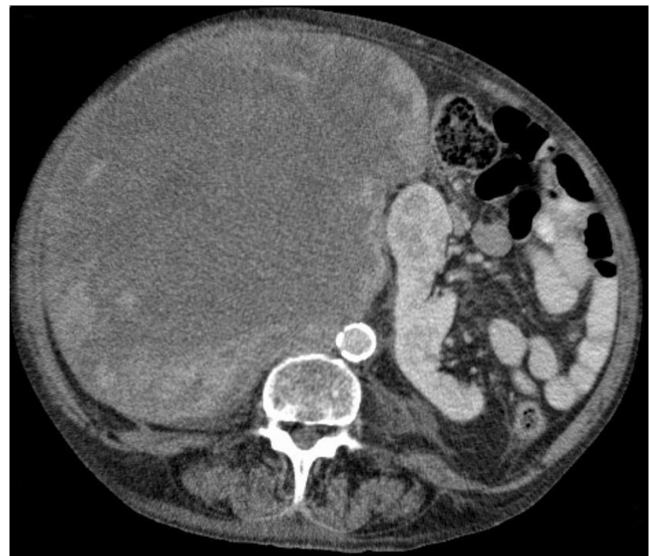
Retroperitoneal sarcomas are malignant tumors arising from mesenchymal cells, which are usually located in adipose, muscle, or connective tissue. Median patient age is approximately 50 years, although patients of any age can be affected. Incidence is equal among men and women. Retroperitoneal sarcomas metastasize via hematogenous route, typically to the liver or lung.

The most common clinical presentation is that of an abdominal mass. This is due to the fact that RS smaller than 5 cm usually do not cause clinically significant complaints. Other symptoms and signs include non-specific, vague abdominal discomfort or pain, weight loss, and early satiety. Some cases of RS may present with intestinal obstruction or bleeding. Lower extremity swelling or pain have also been reported as presenting symptoms.

Computed tomography (CT) is the initial test of choice in the evaluation of suspected RS. Computed tomography facilitates accurate estimation of tumor location and size, its relationship to surrounding anatomic structures, and identification of metastatic lesions within the abdomen. Tumor characterization (i.e., fatty tumor) may also be possible using the CT imaging.

Magnetic resonance imaging can also provide useful information with regards to the tumor location, involvement of surrounding structures, and the presence of metastatic disease. The importance of axial MR images in addition to sagittal and coronal views has been emphasized. Large-scale comparisons of CT and MRI techniques in the setting of RS are scarce.

Following identification of a retroperitoneal tumor, a broad list of differential diagnoses should be considered. This list includes germ cell tumor, teratoma, cyst, hematoma and abscess, functioning and non-functioning adrenal tumor, renal tumor, pancreatic tumor, advanced gastrointestinal carcinoma, soft tissue sarcoma, and other neoplasms. Further workup should include detailed physical examination (including testicular examination and ultrasound) and measurement of serum beta human chorionic gonadotropin (beta-HCG) and alpha-fetoprotein (AFP) if testicular mass is suspected or found. In cases of lymphadenopathy, core needle or excisional node biopsy may show a lymphoma. For suspected gastrointestinal tumors, appropriate contrast studies and endoscopy may be helpful. Once diagnostic list is 'narrowed down' to RS, the role of biopsy is controversial. Biopsy may be best performed at the beginning of definitive resection for the purpose of diagnostic confirmation.



Computed tomographic appearance of retroperitoneal liposarcoma. Adapted from Radiology Picture of the Day (http://www.radpod.org/).

Surgery is the standard treatment for RS. While complete margin-negative resection may be difficult to achieve, it is the only hope for cure. Difficult surgical management is related largely to the late presentation of RS, their large size, and the complexities of retroperitoneal anatomy. Surgical failures are related to the large tumor size on presentation, the inability to achieve wide surgical margins, and the limitations of existing adjuvant radiation and chemotherapy regimens. Local failure is seen in nearly 90% of patients who die of RS, and can be seen even 5 to 10 years after resection. The overall long-term recurrence rate for RS is thought to be over 70%. In general, the prognosis is worse for RS than for other trunk or extremity sarcomas.

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No significant survival benefit has been seen with incomplete resection, which is further complicated by >30% incidence of vascular involvement of these lesions, as well as the requirement for multivisceral resections (colon, kidney, small bowel, pancreas, bladder) in over 60% of cases. This accentuates the need for very careful preoperative planning in order to prevent suboptimal surgical results and potentially serious operative complications.

Retroperitoneal liposarcomas may represent an exception to this rule, with reports of multiple and incomplete resections for repeated recurrences. Some also report effective symptom palliation and prolonged survival following partial resections of liposarcomas as compared to those who only underwent biopsy. Retroperitoneal liposarcomas have lower incidence of distant metastases (<10%) as compared to other RS subtypes (15-34%).

Neoadjuvant chemotherapy may be used in an attempt to 'shrink' the tumor. Postoperative radiotherapy may be of benefit. However, based on limited clinical evidence, should only be conducted in the setting of a clinical trial. Adjuvant chemotherapy, when added to surgical therapy, may produce a modest improvement in the recurrence-free survival rate (approximately 10%). Unfortunately, the experience with both radiotherapy and chemotherapy in the setting of RS continues to be limited. Toxicities of both chemo- and radiotherapy have to be considered carefully before proceeding with these options.

Local RS recurrences can be treated with resection in the absence of metastatic disease. Surgical treatment of local recurrences has been reported to produce disease-free survival when all grossly evident recurrent disease can be removed. Not unexpectedly, subsequent recurrences have progressively lower chances of successful resection. The role of chemotherapy and radiotherapy in the setting of local recurrence is still controversial. In general, adjuvant treatment following re-resection should be considered for all patients who did not previously undergo chemotherapy.

Metastatic workup for RS includes plain film or CT evaluation of the thorax. Compared to patients with extremity sarcomas, those with RS have greater propensity for local recurrence and disseminated abdominal disease. Approximately 80% of recurrences are seen within 5 years of initial treatment. Treatment of pulmonary metastases is extrapolated largely from the experience with sarcomas in general.

Pulmonary metastases are associated with median survival of 6 to 12 months. However, some reports indicate that resection of often multiple pulmonary metastases may associated with prolonged survival in 25% to 39% of patients. Here, the prognosis seems to be related to complete resection of all lesions, a disease-free interval of more than 12 months, or a low-grade primary tumor. Some cite less four or less metastatic lesions as a positive prognostic factor. Negative prognostic factors include greater number of metastatic lesions and rapid tumor doubling times.

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For hepatic metastases, survival rates following resection have been less than those seen after resection of pulmonary metastases. Although recurrence rates are very high for patients with hepatic metastases, an increase in median survival from approximately 11 months to about 30 months has been reported following resection.

For unresectable metastatic disease, chemotherapy may provide some clinical efficacy. Doxorubicin, ifosfamide, and dacarbazine have been demonstrated to have significant activity in the setting of metastatic soft tissue sarcomas. Reports also indicate that combinations of agents may be more effective than single-agent chemotherapy. Appropriate clinical trials should be considered for all patients with advanced and/or unresectable disease.

Postoperative surveillance for RS, according to NCCN guidelines, is based on low- versus high-grade tumor categories. Patients with low-grade disease should undergo physical examination with CT scan of chest, abdomen, and pelvis every 3 to 6 months for 2 to 3 years, then annually. For patients with high-grade disease, physical examination and CT scan of chest, abdomen, and pelvis should be performed every 3 to 4 months for 3 years, then every 6 months for 2 years, then annually.

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