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MESENTERIC INFLAMMATORY MYOFIBROBLASTIC TUMOR: MRI AND CT IMAGING CORRELATED TO ANATOMICAL PATHOLOGY

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Inflammatory myofibroblastic tumor (IMT) is a rare tumor, classified by WHO of intermediate biological potential with tendency for local recurrence and small risk for distant metastasis. Histologically IMT is a mixture of inflammatory cells and myofibroblastic spindle cells proliferation. To our knowledge there is no MRI description of mesenteric IMT in the literature. We would like to emphasize the correlation between medical imaging and anatomical pathology based on our experience of a mesenteric IMT in a 28-year-old patient.

Key-word: Mesenteric, inflammatory, myofibroblastic, tumor, MRI.

Case report

An abdominal CT performed in a 28-year-old woman suffering from asthenia, appetite loss and intermittent hypogastric abdominal pain with night sweats and fever for six weeks demonstrates an 8 cm diameter pelvic mass, possibly from mesenteric origin. The non calcified mass shows well-defined margins, homogeneous attenuation before contrast injection and peripheral enhancement after contrast injection at portal phase that slightly progresses at late phase, while the center stays hypoattenuated (Fig. 1). Three weeks later MRI is also performed with T2, T2 fat sat, TSE and T1 fat sat weighted images with and without Gadolinium injection (Fig. 2). Patient is then admitted for surgical laparotomic exploration, which demonstrates a large pelvic mass from mesenteric origin near the terminal ileum (Fig. 3). Twenty-five centimeters of the terminal ileon and the appendix are resected along with six lymph nodes and ileocecal anastomosis is performed. Anatomical pathology examination of the mass concludes with inflammatory myofibroblastic tumor based on proliferation of spindle cells and inflammatory infiltration of lymphocytes at histology (Fig. 4). Ileum, appendix and lymph nodes are normal. Evolution after surgery is good with an uneventful follow-up.

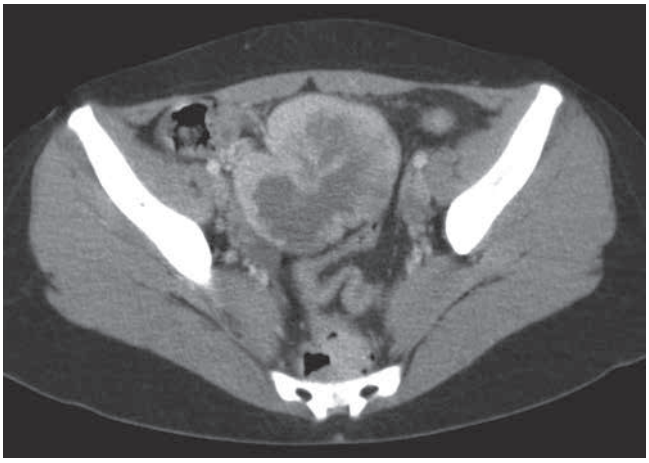

Fig. 1. — Axial CT demonstrating a large mesenteric pelvic mass with well-defined margins and heterogeneous peripheral enhancement after iodine IV injection at portal phase.

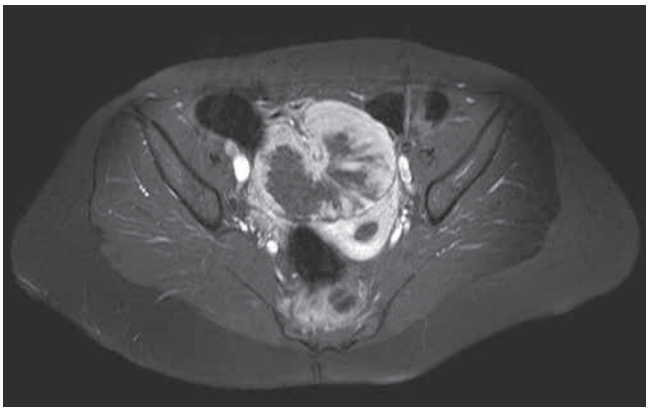

Fig. 2. — MRI axial T1FS with gadolinium IV injection (4 minutes) demonstrating intense enhancement of the peripheral inflammatory component while the central fibrotic component is hypovascular.

Discussion

Inflammatory myofibroblastic tumor (IMT) is a rare tumor, classified by WHO of intermediate biological potential with tendency for local recurrence and small risk for distant metastasis. It is also known as inflammatory pseudotumor, inflammatory fibrosarcoma, xanthogranuloma or myofibroblastoma among others. Histologically IMT is a mixture of inflammatory cells and myofibroblastic spindle cells proliferation. ALK gene abnormalities, typically associated with anaplastic large cell lymphoma, are seen in approximately 50% of IMT cases (1). Pathogenesis in unknown and several hypotheses

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Fig. 3. — Macroscopic study - Eight centimeters diameter mesenteric mass with well-defined margins adhering to the terminal ileum: inflammatory myofibroblastic tumor confirmed at histology. Note the central fibrotic component and the encapsulated aspect.

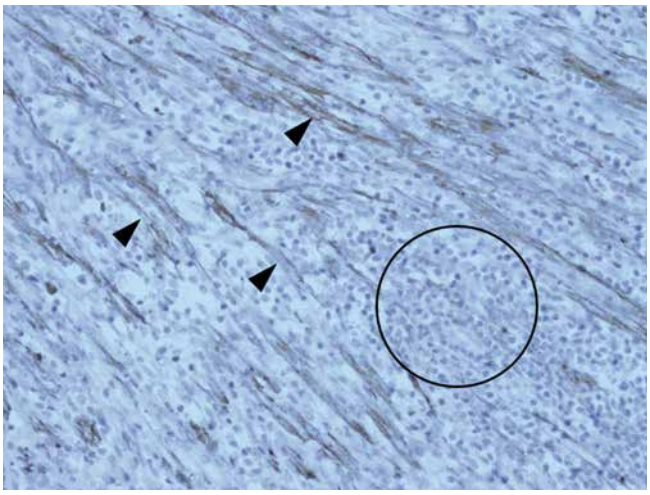

Fig. 4. — Histology - Proliferation of spindle cells (arrowheads) and inflammatory infiltration of lymphocytes (circle).

have been made: low-grade fibrosarcoma with inflammatory cells, inflammation following minor trauma or surgery, immune/autoimmune mechanism or reaction secondary to infection. IMT is ubiquitary and has been described in almost every body sites. It most occurs during the first two decades of life, usually solitary but some multifocal cases have been described. Clinically abdominal IMT is nonspecific: fever, night sweating, malaise, weight loss, abdominal pain, palpable abdominal mass or diarrhea. Laboratory findings are also nonspecific, reflecting the chronic inflammation: elevation of CRP, anemia, thrombocytosis and hypergammaglobulinemia.

In ultrasonography, mesenteric IMT appears as a well-defined or infiltrating solid mixed-echostructure mass within the mesentery. Vascularization may be seen with Doppler ultrasound.

Typical CT findings are those of a slow growing unique mass with well-defined or infiltrating margins (2). Calcifications are uncommon. Involvement of adjacent bowel segments is exceptional. The mass is typically heterogeneous in attenuation and largest lesions may have central areas of hypoattenuation suggestive of necrosis. Enhancement after iodine IV injection is variable, from non-enhancing to peripheral or heterogeneous enhancement and may be related to fibrosis age: early enhancement if fibrosis is «young» with a larger inflammatory component and late enhancement if fibrosis is «old» with a larger fibrotic component (3).

To our knowledge there is no MRI description of mesenteric IMT in the literature. With this case we would like to emphasize the correlation between MRI imaging of IMT and its histological aspect. In our present case, the lesion has a homogeneous signal intensity on T1 weighted sequence without contrast. On T2 weighted sequence, the lesion presents two components: an irregular central fibrotic component with low signal intensity and a peripheral inflammatory component with relatively high signal intensity. T1 weighted sequence four minutes after Gadolinium injection demonstrates intense enhancement of the peripheral inflammatory component while the central fibrotic component is hypovascular. MRI aspect on T1 weighted images after Gadolinium injection is very similar to the CT aspect at portal venous phase. Peripheral enhancement in both techniques is highly representative of the inflammatory component, but medical imaging is still nonspecific of IMT requiring histological confirmation. Given the similar results of both techniques and the young age of the concerned population (mostly first two decades), MRI should be preferred to CT because of its non-irradiating nature.

Range of differential diagnosis for mesenteric IMT is wide including benign tumors and pseudo-tumors like mesenteric fibromatosis (desmoid tumor) or sclerosing mesenteriris and malignant tumors like lymphoma, GIST or carcinoid tumor metastasis (4). Nonspecific CT and MRI imaging aspect does not ensure certainty of diagnosis so that surgical exploration and anatomical pathology examination are required to differentiate IMT from other tumors. Treatment of choice consists in excision with clear resection margins except for orbitary locations treated by high doses of systemic steroids which can be associated to low-dose radiation therapy. Local recurrences occur in about 10% to 25% cases of abdominal IMT especially within a year of surgery. Distant metastases are rare, about less than 5%.

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