Case 8635

Mesenteric panniculitis: value of MRI for differential diagnosis
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Case Type: Clinical Cases
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Patient: 54 years, male

Clinical History:

We present a patient with non-specific abdominal pain and tenderness in the mesogastric region, without peritonism or palpable masses. He already had abdominal ultrasound, which failed to depict pathological changes but was reported as “limited by the patient’s habit”.

Imaging Findings:

A middle-aged overweight patient complained of intense, diffuse abdominal pain during the last two months. His medical history recorded hypertension under medical treatment, without any previous surgical interventions in the abdomen and pelvis. At examination, tenderness in the mesogastric region was noted, without peritonism or palpable masses. He already had abdominal ultrasound, which failed to depict pathological changes but was reported as “limited by the patient’s habit”.

CT was performed and complemented with multiplanar and MIP reformations. The main finding consisted of a very large (> 20 cm in maximum axial diameter) mesenteric mass lesion displacing the bowel loops, centred on the superior mesenteric vessels that were of normal caliber and undisplaced; the mass was demarcated by a thin peripheral soft tissue rim, and consisted internally in fat tissue with slightly increased attenuation with several scattered sub-centimeter solid nodules. No abnormalities involved the remaining abdomino-pelvic organs. Clinical suspicion concerning the persistence of symptoms, the lesion’s large size and the presence of lymph-nodes lead to further diagnostic workup with MRI, which confirmed the normal configuration of the mesenteric vasculature and the absence of solid enhancing portions. The internal fatty tissue showed diffusely increased signal intensity on STIR images and slight enhancement on fat-saturated post-gadolinium scans, findings consistent with mild inflammation. Confirmation of the benignity of the lesion was obtained by means of surgical biopsy, with a histological yield of lipid-laden macrophages, inflammatory infiltrates with lymphocyte predominance, necrotic changes and absence of malignant cells.

Discussion:

Mesenteric panniculitis (MP) is an uncommon disorder characterised by a chronic nonspecific inflammation of the small bowel mesentery. Histopathological changes include fat infiltration by inflammatory cells such as lymphocytes and fat-laden macrophages, variable necrosis or fibrosis; in rare instances a shift to progressive fibrosis with retraction (“sclerosing mesenteritis”) has been described.

Usually occurring in middle or late adulthood, nowadays MP may be diagnosed incidentally in patients undergoing cross-sectional imaging for various indications, with a reported prevalence of 0.6%.

Often asymptomatic, MP causes variable and unspecific complaints including abdominal pain, fullness, anorexia, weight loss and fever; sometimes an abdominal mass is palpable. Laboratory findings are usually non-contributory.

Its precise aetiology remains unknown. Some series indicate a strong association with a history of abdominal trauma
or surgery. Other authors report that in nearly 70% of patients MP coexists with cancer (mainly including extra-abdominal non-Hodgkin lymphoma, melanoma, breast, lung and colorectal tumours) and consider MP a paraneoplastic condition, although its temporal and pathogenetic association with the underlying malignancy is unclear. Both symptoms and radiological abnormalities of MP persist for years, even in treated patients; occasionally spontaneous regression has been reported. Empirical treatment approaches have been proposed with a variety of drugs, with no clear benefit. Surgery has been rarely attempted and is usually impossible.

Plain films are unhelpful. With ultrasound a subtle poorly defined hyperechogenicity in the mid-abdomen goes often overlooked. CT is the imaging mainstay for MP and allow a confident diagnosis when typical features are present, consisting in a mesenteric mass of inhomogeneous fatty tissue usually located on the left abdomen with some regional mass effect, showing a slightly increased density compared to attenuation values of normal retroperitoneal or subcutaneous fat. The lesion is centred on the superior mesenteric vessels without narrowing nor displacing them, usually with the preservation of a perivascular rim of normal fat compared to inflamed surrounding fat (the so-called "fat ring sign"), and demarcated by a "pseudocapsule" never exceeding 3 mm in thickness; small soft tissue nodules are noted, not exceeding 5 mm.

Incidentally discovered mesenteric lesions may pose a diagnostic challenge and sometimes biopsy may be necessary. Differential diagnoses include firstly benign conditions such as mesenteric oedema due to heart failure or portal hypertension; the presence of ascites suggests a different diagnosis. Secondly, we have to consider inflammatory changes associated with pancreatitis, colonic diverticulitis, omental infarction or appendicitis. Lymphoma, the rare mesenteric desmoid and tuberculosis may be suggested with lymphadenopathies, since mesenteric nodes over 1 cm are very atypical with MP. Sometimes, liposarcoma is not easily differentiated from MP with computed tomography. According to our experience, MR may increase diagnostic confidence for MP and differentiation from other mesenteric diseases, avoiding biopsy that is usually not justified considering its incidental, benign and self-limiting nature. The inflamed fatty content of the lesion is well demonstrated both by STIR and by contrast-enhanced fat saturated images and the presence of mural-septal thickening and of solid enhancing components is excluded.

**Differential Diagnosis List:** Mesenteric panniculitis

**Final Diagnosis:** Mesenteric panniculitis

**References:**

Description: Unenhanced (a to c) and portal venous phase (d to f) images. Characteristic CT picture of mesenteric panniculitis including slightly increased density of mesenteric fat, with some mass effect on bowel loops. Origin:
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Description: Sagittal (a) and coronal (b,c) MIP reformations demonstrate the true overall extent of the loaf-shaped, well demarcated mesenterial mass, without displacement and compression effect on both arterial and venous vessels, and the presence of several small nodes. Origin:
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**Description:** Axial MIP image demonstrate the maximum transversal diameter of the mesenterial mass and the peripheral distribution of several subcentimeter soft tissue nodules representing lymph nodes.

**Origin:**
Description: Detailed axial image of the superior mesenteric axis showing the ‘fat halo’ sign consisting in a rim of preserved normal fat density surrounding the main vessels. Origin:
**Figure 3**

**a**

*Description:* Axial T2-weighted (a), in-phase (b) and out-phase (c) axial images. Mesenteric mass does not show different signal intensity in respect to surrounding intra-abdominal and subcutaneous fat tissue. *Origin:*

**b**

*Description:* Axial T2-weighted (a), in-phase (b) and out-phase (c) axial images. Mesenteric mass does not show different signal intensity in respect to surrounding intra-abdominal and subcutaneous fat tissue. *Origin:*

**c**

*Description:* Axial T2-weighted (a), in-phase (b) and out-phase (c) axial images. Mesenteric mass does not show different signal intensity in respect to surrounding intra-abdominal and subcutaneous fat tissue. *Origin:*
**Description:** Axial STIR images.
Mesenteric mass shows subtle increase of signal intensity in respect to surrounding intra-abdominal fat, consistent with slight tissue oedema and inflammation. **Origin:**
Figure 4

**Description:** Axial fat-saturated scans post-gadolinium (a, b).
Loaf-shaped mesenteric mass shows subtle enhancement in respect to surrounding intra-abdominal fat, consistent with mild inflammation. **Origin:**
**Description:** Axial MIP reformation shows peripheral distribution of several sub-centimeter enhancing nodules representing small lymph nodes. **Origin:**

**Description:** Axial (d) and coronal (e) MIP reformations document the extent and morphology of the mesenteric mass, displacing bowel loops, but without any dislocation or compression effect on mesenteric vasculature. **Origin:**
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