RADIOLOGIC PATHOLOGIC CORRELATION / Gastrointestinal imaging

Mesenteric cavernous hemangioma: Imaging-pathologic correlation

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Case study

A 50-year old female with no remarkable medical history consulted her doctor because of persistent epigastric pain. The clinical examination was unremarkable and laboratory tests were normal.

Ultrasonography revealed a subumbilical, homogeneous, echogenic mass with an axial diameter of 5 cm. The mass had regular margins, posterior acoustic enhancement, and no visible vascularisation on colour Doppler imaging.

Computed tomography (CT) of the abdomen and pelvis before and after administration of iodinated contrast material showed a tissue mass located in the mesentery with regular margins, no calcification, no communication with the bowel loops, and attenuation values of 70 HU before injection. After intravenous administration of iodinated contrast material, CT demonstrated discontinuous, peripheral nodes that enhanced centripetally, with a dynamic pattern of enhancement identical to that of the aorta and which persisted during the delayed phase. Multiple vessels were visible within the mass including a branch of the superior mesenteric artery, but there was no thrombosis or obstruction (Fig. 1). No enlarged lymph node was visible.

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Figure 1. Asymptomatic mesenteric hemangioma in a 50-year-old woman. CT image of the mid abdomen in the sagittal plane during the enteric phase of enhancement shows a well-circumscribed mass of the mesentery (white arrow), with peripheral nodular enhancement that has narrow channels of communication with the superior mesenteric artery (black arrow) and vein (arrowhead).

MR imaging showed high signal intensity lesion on T2-weighted sequences (Fig. 2) and low signal intensity on diffusion-weighted MR images (B50 and B1000) with no drop in apparent diffusion coefficient value (ADC = 1.9 * 10−3 mm²/sec) on diffusion-weighted images. The oval mass also showed regular margins and contained threadlike formations, which were suggestive of vascular structures extending from the mesenteric vessels.

On unenhanced T1-weighted images, the lesion was homogenous with intermediate signal intensity. After intravenous administration of gadolinium-chelate, the enhancement pattern was similar to that seen on CT (Fig. 3).

Percutaneous biopsy was not considered in view of the vascularisation of the lesion, difficulty of access, and its relationships to the large mesenteric vessels.

Surgical resection was thus decided. Intraoperatively, a mesenteric mass with no extension to the bowel loops was

Figure 2. T2-weighted (TR/TE = 850/102 ms, flip angle = 180°) MR image in the axial plane demonstrates a lesion with a higher signal intensity than fat, similar to that of a hepatic hemangioma (arrow).

Figure 3. Mesenteric cavernous hemangioma. a: fat-suppressed T1-weighted gradient-echo (TR/TE = 3.67/1.85 ms, flip angle = 10°) MR image in the axial plane during the enteric phase shows progressive enhancement with peripheral nodular enhancement (arrow); b: fat-suppressed T1-weighted gradient-echo (TR/TE = 3.67/1.85 ms, flip angle 10°) MR image in the axial plane during the delayed phase shows persistent enhancement with centripetal fill-in, greater than during the enteric phase (arrow).

Figure 4. Laparoscopic view. The lesion is located in the mesentery without extension to the gastrointestinal tract wall.
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found (Fig. 4). The mass was resected along with 20 cm of the jejunum.

Histopathological examination of the resected specimen revealed a well-marginated vascular lesion. The lesion was made of multiple dilated cavities lined with flattened endothelium with no nuclear atypia that were separated by septa of fibrous connective tissue. The vessel lumen showed thrombosis and contained numerous red blood cells (Fig. 5). Immunolabelling for CD31, which is vascular endothelium-specific, was positive in the cytoplasm. It was however negative for the lymphatic endothelial marker D2-40. Smooth muscle actin marked the smooth muscle component of the vessel walls. The lesion was definitely diagnosed as a cavernous hemangioma of the mesentery. Follow-up at 1 year showed no recurrence of the lesion.

Figure 5. Photograph shows histopathological features (HE stain, original magnification × 20) of the lesion that contains large cavities filled with red blood cells and bordered by endothelium resting on an abundant fibrous stroma.

Discussion

The lesion reported showed clinical, radiological and histological features similar to those of cavernous hemangiomas found in the abdomen including hepatic hemangioma [1,2]. Like these, it was clinically asymptomatic with no internal hemorrhage or infection and no mass effect on adjacent organs.

On ultrasonography, the lesion was hyperechoic with posterior acoustic enhancement. On CT, it demonstrated tissue density and enhancement pattern characteristic of angiomomas. MR imaging showed no restriction on diffusion-weighted images and typical high signal intensity on T2-weighted images similar to typical pattern of hemangiomas. Unusually, a rich vascular component made up of superior mesenteric vessels is present making it necessary to excise a portion of the superior mesenteric artery during surgery.

Histologically, the lesion showed multiple dilated cavities with vessel lumina that showed thrombosis in places and contained red blood cells. CD31 immunolabelling, a specific marker for vascular endothelium, was positive [3,4].

A review of the literature found a few cases of mesenteric cavernous hemangioma [5,6]. They do not have any characteristic imaging or histological features. By contrast, multiple cases of cavernous hemangioma were found in the liver [1,2], and more rarely in unusual locations including gastroplenic ligament [7], small bowel [8], colon, and rectosigmoid junction [9].

A percutaneous biopsy was considered in our patient because it is often recommended in hepatic angioma with atypical presentation [10]. However, percutaneous biopsy was disregarded because of a deep location and high risk of iatrogenic complication. Surgical excision was thus chosen, taking into account the possibility of complications such as hemorrhage or secondary infection. According to Freeney et al., the rate of complications linked to size in hepatic hemangiomas is between 4.5% and 19.7%. There are two types of complications: on the one hand, complications that are specific to the lesion such as thrombosis or inflammation; and on the other, more general and systemic complications such as hemorrhage, volvulus, or compression of adjacent organs [1,11].

On imaging, if a mesenteric mass is identified, this must lead to a consideration of the differential diagnoses, distinguishing the fluid lesions, consisting of cystic lymphangiommas and mesothelial lesions, from solid masses including desmoid tumour, solitary fibrous tumour, peritoneal carcinoma, and leiomyomatosis, and also from fat-containing lesions such as teratoma and lipoma [12,13]. In our patient, the lesion was purely solid with no cystic or fatty component. This was confirmed by imaging, with ultrasonography showing a hyperechoic echostructure, CT demonstrating a lesion with soft tissue attenuation values, and MRI showing an intermediate signal intensity on T1-weighted images with centripetal enhancement after injection of a contrast medium and no drop in signal intensity on out-of-phase T1-weighted sequences.

When considering only solid tumours, three groups can be distinguished on the basis of enhancement patterns. Predominant enhancement during the arterial phase suggests gastrointestinal stromal tumour, Castleman’s disease, solitary fibrous tumour, and splenosis nodule. Predominant enhancement during the enteric phase, suggests desmoid tumour, actinomycosis, carcinomatosis node or solitary fibrous tumor. Finally, poor enhancement on both suggests lymphoma, inflammatory pseudotumour or endometriosis.

In our patient, the lesion showed predominant enhancement during the arterial phase. However, gastrointestinal stromal tumor is hypervascular and well demarcated, communicates with the bowel loop and shows extraluminal growth. The angiomma-type pattern of enhancement and the high signal intensity on T2-weighted images were not consistent with Castleman’s disease. Our patient had no history of trauma, surgery, infection or splenic tumor and the enhancement pattern was not identical to that of the spleen. In addition, these nodules are found around the gastroplenic or splenorenal ligaments or the space around the diaphragm so that the diagnosis of splenosis nodule was excluded. Solitary fibrous tumor is usually asymptomatic, until it leads to a mass effect. In addition, it is hypervascular with a necrotic center and tends to present small peripheral vessels rather than large- and medium-calibre vessels like in our patient.
Conclusion
The diagnosis of mesenteric hemangioma should be considered in the presence of a mesenteric tumor that presents clinical, imaging and pathologcial features that are identical to those of hepatic hemangioma. The diagnosis is definitely confirmed by histopathological analysis.

Disclosure of interest
The authors declare that they have no conflicts of interest concerning this article.

References