CASE REPORT

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Idiopathic Isolated Omental Panniculitis Confirmed by Percutaneous CT-Guided Biopsy

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The preoperative diagnosis of intraabdominal panniculitis is difficult due to its rarity. However, the increased use of abdominal computed tomography (CT) for a variety of indications has increased the diagnosis of intraabdominal panniculitis, including omental panniculitis. The characteristic CT features of intraabdominal panniculitis are increased attenuation of the adipose tissue, the fat-ring sign, a tumoral pseudocapsule, soft-tissue nodules, and a left-sided orientation of mass maximum transverse diameter. Recognition of these features is valuable in the diagnosis of panniculitis, and hence percutaneous CT-guided biopsy to determine their presence may prevent unwarranted surgery. We report the case of a 61-year-old man found to have an idiopathic isolated omental panniculitis that was diagnosed by abdominal CT and percutaneous CT-guided biopsy. **(Gut and Liver 2009; 3:321-324)**

Key Words: Panniculitis; Peritoneal; Tomography, X-ray computed

INTRODUCTION

Dystrophic and aseptic inflammatory disease of intraabdominal adipose tissue is a rare entity.[1,2] This disorder mainly involves the mesentery of the small bowel, especially at its root, and occasionally the mesocolon; however, it can also occur at any other sites in the abdomen, including the pelvis, the peripancreatic area, and the omentum.[3] Isolated omental panniculitis means the intraabdominal panniculitis that has no evidence of pancreatitis, inflammatory bowel disease, or extraabdominal fat necrosis, and involves the omentum only.[1,4] There are only three cases of intraabominal panniculitis with isolated omental involvement that have been reported in the medical literature; these prior cases were diagnosed by the exploratory laparotomy.[1,4,5] We report a case of isolated omental panniculitis diagnosed by abdominal computed tomography (CT) and confirmed by percutaneous CT-guided biopsy.

CASE REPORT

A 61-year-old man presented with a one week history of left upper quadrant noncramping pain and nausea. Ultrasonography on his abdomen which was performed at another hospital revealed two hyperechoic masses in left upper quadrant area around the splenic flexure of the colon and the possibility of colonic mass was suggested. The medical history was unremarkable except diabetes mellitus. The physical examination showed a low grade fever (37.5°C) and tenderness at the left upper quadrant of the abdomen. There was no palpable mass in his abdomen. Laboratory testing revealed a mild leukocytosis (11,100/mm^3), elevated fasting serum glucose (142 mg/dL), elevated ESR (47 mm/h), elevated high sensitivity CRP (10.19 mg/dL), and normal amylase (50 IU/L). The colonoscopy was unremarkable. CT of the abdomen showed two soft tissue masses (4.4×3.1 cm and 3.1×2.2 cm) in the omentum around the transverse colon (Fig. 1). The attenuation of the masses was higher than that of the surrounding fat tissue. The fat-ring sign and a tumoral pseudocapsule were observed. The pancreas appeared normal. The diagnosis of isolated omental panniculitis was suggested. We performed a percutaneous CT-guided

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biopsy instead of a surgical biopsy based on the CT findings which was highly suggestive of a benign condition. The histology revealed aggregates of foamy macrophages and chronic inflammatory process including plasma cells and lymphocytes (Fig. 2A). Fibrosis was also seen (Fig. 2B). The diagnosis of isolated omental panniculitis was made according to the clinical symptom, the CT finding and the histology, and the patient was treated with low dosage of prednisolone. Three weeks later, the abdominal pain had completely resolved. A follow-up CT scan two months later showed the regression of the two omental masses (2×1 cm and 0.5×0.5 cm) (Fig. 3). The patient continued to be well, and completely asymptomatic for 6 months follow-up.

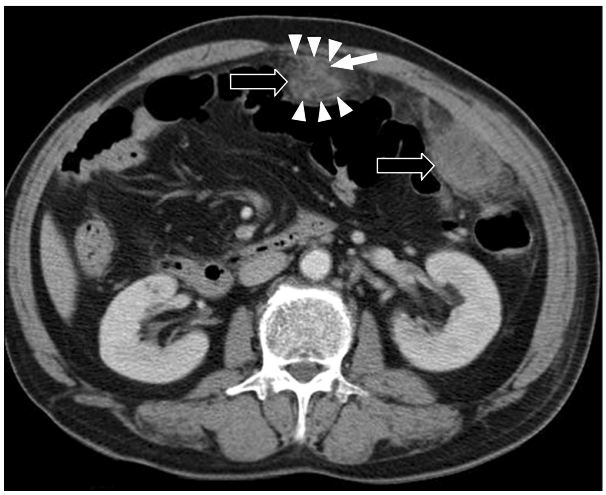

Fig. 1. Contrast-enhanced abdominal computed tomography (CT) showing two heterogeneous mixed low- and high-attenuation masses (open arrows) in the omentum around the transverse colon. The fat-ring sign (arrow), which is the omental fat surrounding the omental vessels, is noted. A tumoral pseudocapsule (arrowheads) is also evident as anterior and posterior thin hyperdense rims surrounding the omental mass.

DISCUSSION

The following criteria are considered necessary for the diagnosis of intraabdominal (mainly mesenteric) panniculitis: (i) diffuse, single, or multiple masslike fatty lesions in the mesentery, retroperitoneum, omentum, and/or pelvis; (ii) histological confirmation of fat necrosis with inflammatory infiltrates and/or infiltration with foamy lipid-laden macrophages; and (iii) no evidence of pan-

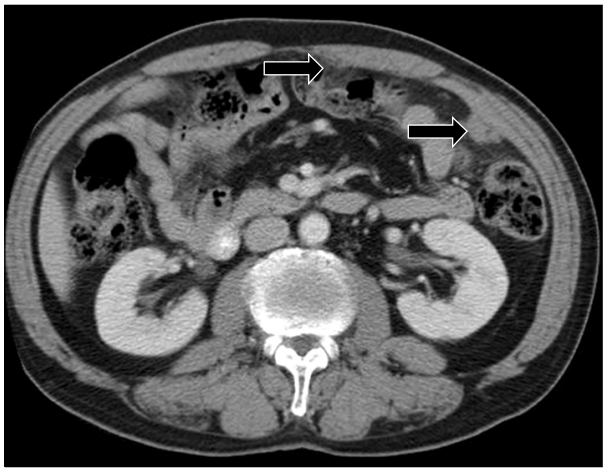

Fig. 3. Follow up contrast-enhanced abdominal computed tomography (CT) showing markedly reduced omental masses (open arrows) as compared with the original, posttreatment CT.

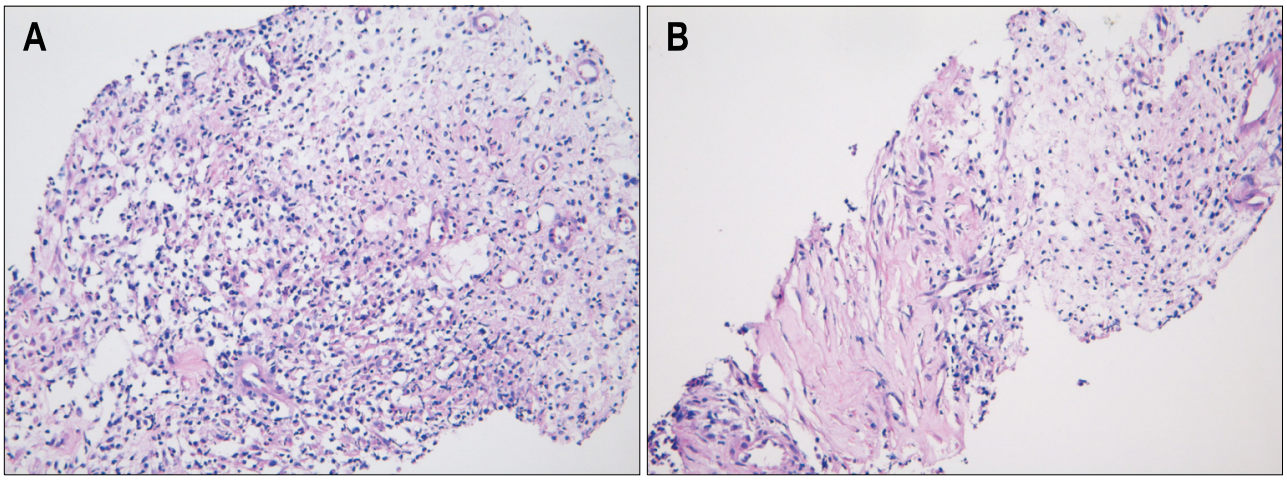

Fig. 2. Microscopic findings. Aggregates of foamy macrophages and infiltrates of chronic inflammatory cells are present. Fibrosis is also evident (A, H&E stain, ×200; B, H&E stain, ×200).

creatitis, inflammatory bowel disease, or extraabdominal fat necrosis (Weber-Christian disease).[1] This disease is progressive and has three pathological presentations: degeneration of mesenteric fat (mesenteric lipodystrophy), followed by an inflammatory reaction (mesenteric panniculitis), finally leading to fibrosis of the adipose tissue (retractile mesenteritis).[2,6] Sclerosing mesenteritis seems the most appropriate diagnostic term because of the overall presence of some degree of fibrosis.[7]

Most cases remain idiopathic.[1] At the mesenteric lipodystrophy stage, the disease is usually asymptomatic. At the mesenteric panniculitis stage, abdominal pain, fever, and malaise are the most common symptoms. At the retractile mesenteritis stage, formation of an abdominal mass and possibly obstructive symptoms occurr.[2]

On CT, the hallmark of mesenteric panniculitis is increased density of the mesenteric fat tissue compared to the attenuation values of normal retroperitoneal or subcutaneous fat.[8] This hyperattenuating fat surrounds the mesenteric vessels, but does not displace them.[8] The mesenteric lesion, however, may show some regional mass-effect by locally displacing small bowel loops. Several additional CT features have been reported that may provide valuable clues for the diagnosis of mesenteric panniculitis: the fat-ring sign, a tumoral pseudocapsule, soft tissue nodules, and a left-sided orientation of mass maximum transverse diameter.[3,8,9] These features are not seen in other mesenteric diseases such as lipoma, liposarcoma, lymphoma, or mesenteric carcinomatosis, and their presence may lead to a more confident CT diagnosis of mesenteric panniculitis.[3,9] The fat-ring sign and a tumoral pseudocapsule disappear when the mesenteric panniculitis "evolves" to the retractile mesenteritis.[3] The clinical symptoms and the CT findings suggested that the main pathological process present in this patient was inflammation rather than fibrosis.

A definitive diagnosis of mesenteric panniculitis can be made only by pathological analysis. Before the advent of modern diagnostic imaging, the surgical biopsy was done to verify the high density fatty mass on CT in the majority cases of mesenteric panniculitis or sclerosing mesenteritis.[1-3,10] However, the incidental benign and often asymptomatic nature of mesenteric panniculitis usually does not justify biopsy.[8] Wat *et al*.[11] suggested recently that in the absence of a known malignancy, the diagnosis of sclerosing mesenteritis can be made based on the following CT findings without biopsy: (i) hyperattenuating mesenteric fat (especially at the root of the small bowel mesentery). This typically encases undisplaced vessels whilst displacing adjacent bowel loops; (ii) a tumoral pseudocapsule; and (iii) well-defined soft tissue nodules less than 5 mm in diameter surrounded by a fatty halo. If however there are features on CT that are not entirely typical for sclerosing mesenteritis such as soft tissue nodules larger than 10 mm in diameter, retroperitoneal extension, displacement of vasculature, invasion of bowel or increase in size of the nodules on follow-up imaging, then a biopsy is needed to exclude the possibility of a malignancy.[11] And omental involvement of the panniculitis may mimic carcinomatosis, tuberculosis, and primary mesenteric mesothelioma,[11] multiple biopsies are essential for diagnosis.[2] PET-CT may have a future role in improving diagnostic accuracy.[12]

In the prior reports of the isolated omental panniculitis,[1,4,5] described CT finding was only the high density fatty mass without other characteristic CT features, and the diagnoses were made by the exploratory laparotomy because the patients revealed extending abdominal tenderness,[5] or other diseases (such as the lipoma, liposarcoma or a malignant omental tumor) were suspected.[1,4] Wedge resection of the mass,[1] subtotal omentectomy,[5] and partial colorectomy with a resection of greater omental mass and the excision of the lesser omental mass,[4] were performed respectively. In this case, the diagnosis of panniculitis could be made based on the characteristic CT features, but the location of lesions was unusual, then percutaneous CT-guided biopsy was performed.

The indolent forms of the disease do not usually require specific treatment.[3] The guidelines for the treatment of the symptomatic forms are not well established.[3] It would appear that active subacute mesenteric panniculitis, as evidenced by continuing fever, a high erythrocyte sedimentation rate and predominance of inflammatory cells, with only minimal fibrosis on histological section, is likely to respond favorably to steroid treatment.[13] Once the condition has progressed to established fibrosis, steroid treatment is probably ineffectual.[13] In this case, prednisolone therapy likely prevented progression of the disease to a more serious degree of fibrosis. Surgical treatment is usually not indicated for mesenteric panniculitis except for those patients with a extrinsic bowel obstruction.[2]

In summary, we report the case of a patient with idiopathic isolated omental panniculitis that was diagnosed by abdominal CT and confirmed by percutaneous CT-guided biopsy. Despite its rarity, it is now well established that the diagnosis of mesenteric panniculitis can be made based on characteristic radiological features alone.[11,14] But in the case with unusual location including omental involvement, the percutaneous CT-guided biopsy is recommended for confirmation. Knowledge of the CT imaging features of this rare condition may prevent un-

warranted aggressive procedure for the diagnosis and the treatment.

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