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Mesenteric Panniculitis Can Be Diagnosed by Examination and Cured by Comprehensive Therapy

ABSTRACT

Mesenteric panniculitis is a rare, slowly progressive, benign, and chronic fibrous inflammatory disease that affects the adipose tissue of the mesentery. In the present study, we aim to investigate its clinical presentations, computed tomography/sonography scan features, effectiveness of the treatment, and overall prognosis. We investigated various presentations, etiologies, diagnostic approaches, potential treatment modalities, and overall prognosis of mesenteric panniculitis. We present one case of mesenteric panniculitis with abdominal pain, which underwent steroid treatment regimens subsequently and gained weight moderately. An abdomen and pelvis cavity computed tomography scan showed misty mesentery, an ill-defined increase in the density of the peritoneal fat at the base of the mesentery with few small associated lymph nodes. The appearance is that of a panniculitis. His symptoms gradually decreased in intensity and disappeared totally within 1 month after oral prednisone 40 mg per day and moderate gain weight. Computed tomography scan features of the disease have recently been delineated clearly. Standard treatment strategy does not exist, and the current ways mainly consist of immunosuppressor or anti-inflammation agents. Overall prognosis is usually good and recurrence seems to be rare.

Mesenteric panniculitis is a rare, chronic inflammatory disease of mesenteric fat (Badea, Chiorean, Damian, Molnar, & Anton, 2013; Bae, Park, Kim, Lee, & Kim, 2016; Cheng & Liu, 2008; Nasta et al., 2000; Nicholson, Smith, Diab, Scott, 2010; Yasemin, Lacin, & Rabia, 2012). It is characterized by nonspecific inflammation, containing necrotic and fibrotic changes in the mesenteric adipose tissue (Badea et al., 2013; Bae et al., 2016; Cheng & Liu, 2008; Nicholson et al., 2010). Patients with mesenteric panniculitis may be asymptomatic or present with excitatory or inhibitory gastrointestinal symptoms (Issa & Baydoun, 2009; Van Putte-Katier, van Bommel, Elgersma, & Hendriksz, 2014).

The etiology of mesenteric panniculitis is unknown. Various causes have been investigated, including autoimmune disorders, malignancy, abdominal infection, trauma (including surgical procedure), lipodystrophy, and ischemia of the mesentery (Van Putte-Katier et al., 2014). Abdominal computed tomography (CT) scan is the best approach for the diagnosis of mesenteric panniculitis (Van Putte-Katier et al., 2014). All the treatment options are empiric, without the use of a measurement to determine the severity of symptoms and the effectiveness of treatment. The drugs used in the treatment of mesenteric panniculitis are immunosuppressor or anti-inflammation agents. Exploratory surgery may be attempted if medical therapy fails or in the presence of fatal complications such as bowel obstruction or perforation (Issa & Baydoun, 2009). Overall prognosis is usually good and recurrence seems to be rare.

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L.Z. conducted the literature review and acquired the data. D.X. performed analysis, interpretation of data, and drafted the manuscript.

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Clinical Report

History

A 34-year-old man presented with slight intermittent central abdominal pain about three times a day, loose stool without blood, mucus, and fester for more than 1 month. Abdominal pain or discomfort was typically relieved by defecation. Rectal tenesmus did not exist after defecation.

His history included reducing weight (15 kg in 3 months) by adjusting himself to cancelling dinner, ingestng a no carbohydrate and low-fat diet, and doing 200 sit-ups per day in the recent months. The patient had no hypertension or diabetes, no similar abdominal pain history, no previous abdominal trauma, infection, or tumor history. The patient did not eat unclean things, nor take any medication including diet pills.

Examination

On physical examination, the abdomen was grossly flat and soft, had no tenderness or rebound tenderness, no hepatosplenomegaly, no obvious abdominal mass, no gastrointestinal outline, no peristaltic wave, and no shifting dullness. The abdomen had normal bowel sounds. Rectal examination was unremarkable. His body mass index was 23.9.

Laboratory results showed normal routine stool test, complete blood cell counts, C-reactive protein, erythrocyte sedimentation rate, alpha fetal protein, carcinoembryonic antigen, carbohydrate antigen-199, liver kidney function, and electrolytes tests, but high cholesterol. An abdomen and pelvis cavity ultrasound scan showed an ill-defined hyperechoic mesentery with small central hypoechoic areas or a heterogeneous but predominantly hyperechoic mesentery.

An abdomen and pelvis cavity CT scan showed no evidence of bowel tumor, ischemia, or obstruction. However, the CT scan did show "misty mesentery, an ill-defined increase in the density of the peritoneal fat at the base of the mesentery with few small associated lymph nodes. The appearance is that of a panniculitis" (Figure 1).

Comprehensive Therapy

The patient was treated with oral prednisone 40 mg per day, gained weight via proper carbohydrate diet, and followed up in the outpatient department. His latest body mass index is 25.7. Abdominal symptoms gradually decreased in intensity and disappeared totally within 1 month. Follow up CT later showed a decrease in the mesentery (Figure 2). Currently, he has recovered and finished the treatment without recurrence of any anterior symptoms.

Discussion

Mesenteric panniculitis is a rare, chronic inflammatory disease of mesenteric fat (Badea et al., 2013; Bae et al., 2016; Cheng & Liu, 2008; Nasta et al., 2000; Nicholson et al., 2010; Yasemin et al., 2012). It is characterized by nonspecific inflammation, contains necrotic and fibrotic changes in the mesenteric adipose tissue (Badea et al., 2013; Bae et al., 2016; Cheng & Liu, 2008; Nicholson et al., 2010). It usually involves the mesentery of the small bowel, appendix, and less frequently the sigmoid colon or other mesenteric fatty tissue (Van Putte-Katier et al., 2014).

Mesenteric panniculitis is known by alternative terms including "mesenteric lipodystrophy," "liposclerotic mesenteritis," or "misty mesentery." The latter term includes entities such as "sclerosing mesenteritis" and "retractile mesenteritis." The many varied terms present a confusing notion regarding the precise definition of mesenteric panniculitis (Van Putte-Katier et al., 2014).

The etiology of mesenteric panniculitis is unknown. It may occur independently or in association with other relevant disorders. Various causes have been investigated including autoimmune disorders, malignancy, abdominal infection/trauma (including surgical procedure), lipodystrophy, ischemia of the mesentery, and so on (Van Putte-Katier et al., 2014).

Clinical Presentation of Mesenteric Panniculitis

Patients with mesenteric panniculitis may be asymptomatic or present with excitatory or inhibitory gastrointestinal symptoms such as abdominal pain, nausea, vomiting, diarrhea, constipation, intestinal obstruction, or invisible abdominal masses and other discomfort around the abdominal area. Other general presentations include weakness, fever of unknown origin, weight loss, shaking chills, features of Crohn disease, and so on. The abdominal physical examination may reveal no, or a poorly defined abdominal mass involving the mesenteric root, or an obstruction manifestation that rarely occurs (Issa & Baydoun, 2009; Van Putte-Katier et al., 2014).

Diagnosis of Mesenteric Panniculitis

Several neoplasms may be associated with mesenteric panniculitis. In some cases, tumors were discovered before the diagnosis of mesenteric panniculitis. They mainly included some gastrointestinal carcinomas (colorectal or gastric cancers) and hematological malignancies (non-Hodgkin's lymphomas, Hodgkin's disease, chronic lymphocytic leukemia, and plasma cell tumors) (Van Putte-Katier et al., 2014).

Mesenteric panniculitis may be associated with other origins such as autoimmune conditions (autoimmune hemolytic anemia and rheumatoid arthritis),

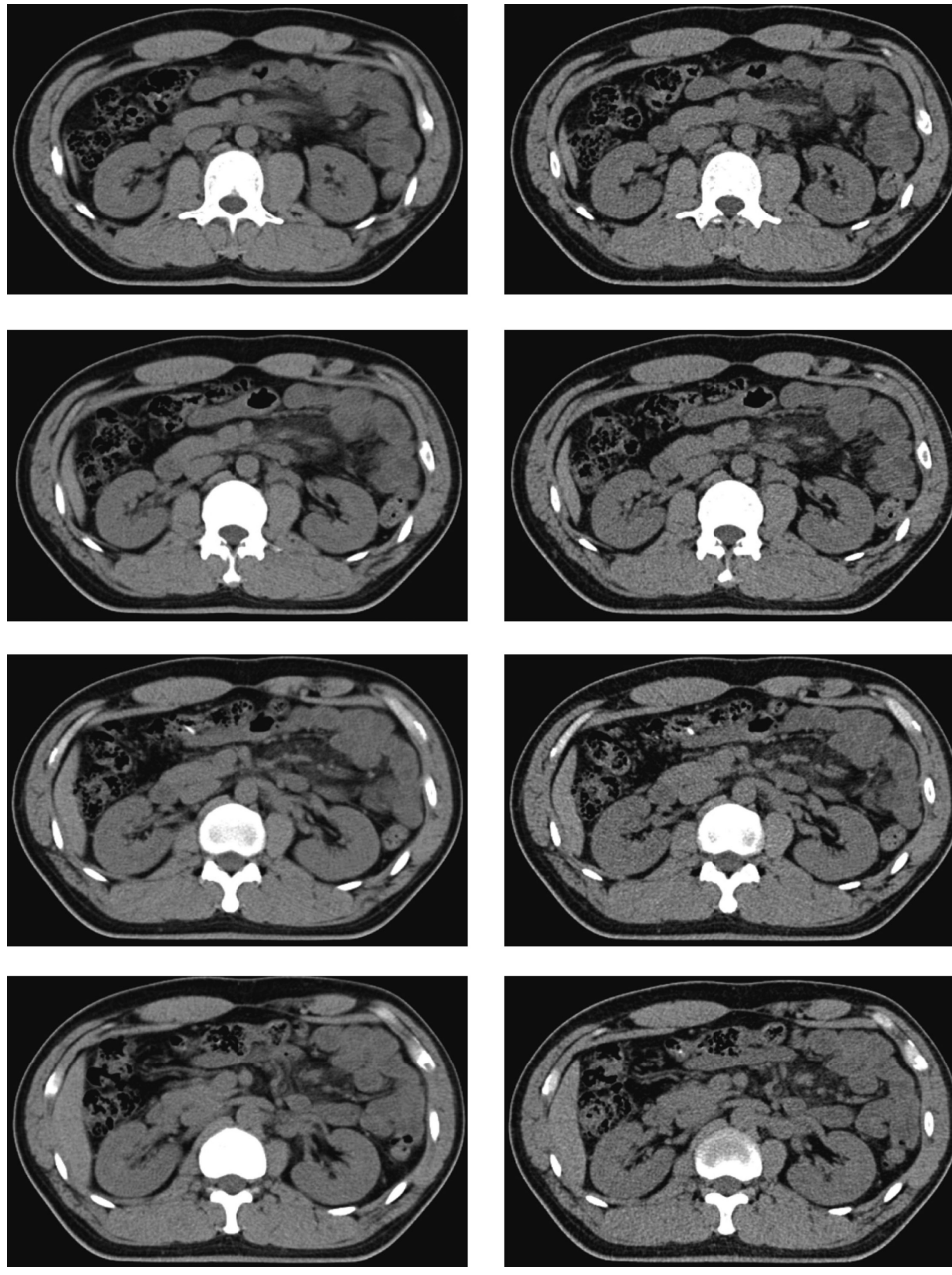

FIGURE 1. Abdominal CT image showing well-limited densification of the mesenteric fat or misty mesentery.

previous abdominal surgeries or traumas (abdominal hemorrhage, laparotomy, cholecystectomy, and appendectomy), gastrointestinal nontumorous diseases (cholelithiasis, cirrhosis, pancreatitis, jaundice conditions and bile blockage or leakage, and peptic ulcers), and mesenteric vascular insufficiency (mesenteric thrombosis) (Van Putte-Katier et al., 2014).

Mesenteric panniculitis is a diagnosis of exclusion, and it is important to exclude other differential diagnoses of a misty mesentery. The diagnosis may be made definitively by tissue diagnosis. Histologically, the thickened mesentery can be divided into three types: diffuse thickening of the mesentery, single knotty thickening at the mesenteric root, and multiple knotty thickening of the mesentery. There are three component changes in the mixed histology: fat necrosis, chronic inflammation, and fibrosis. The histological diagnosis can be established by finding at least one of these components. According to the dominant pathological changes, three sequential histological phases are revealed: mesenteric lipodystrophy type (fat necrosis), mesenteric panniculitis type (fat necrosis and dense inflammatory cell infiltrate, mainly consisting of lymphocytes and fat-laden macrophages), and sclerosing

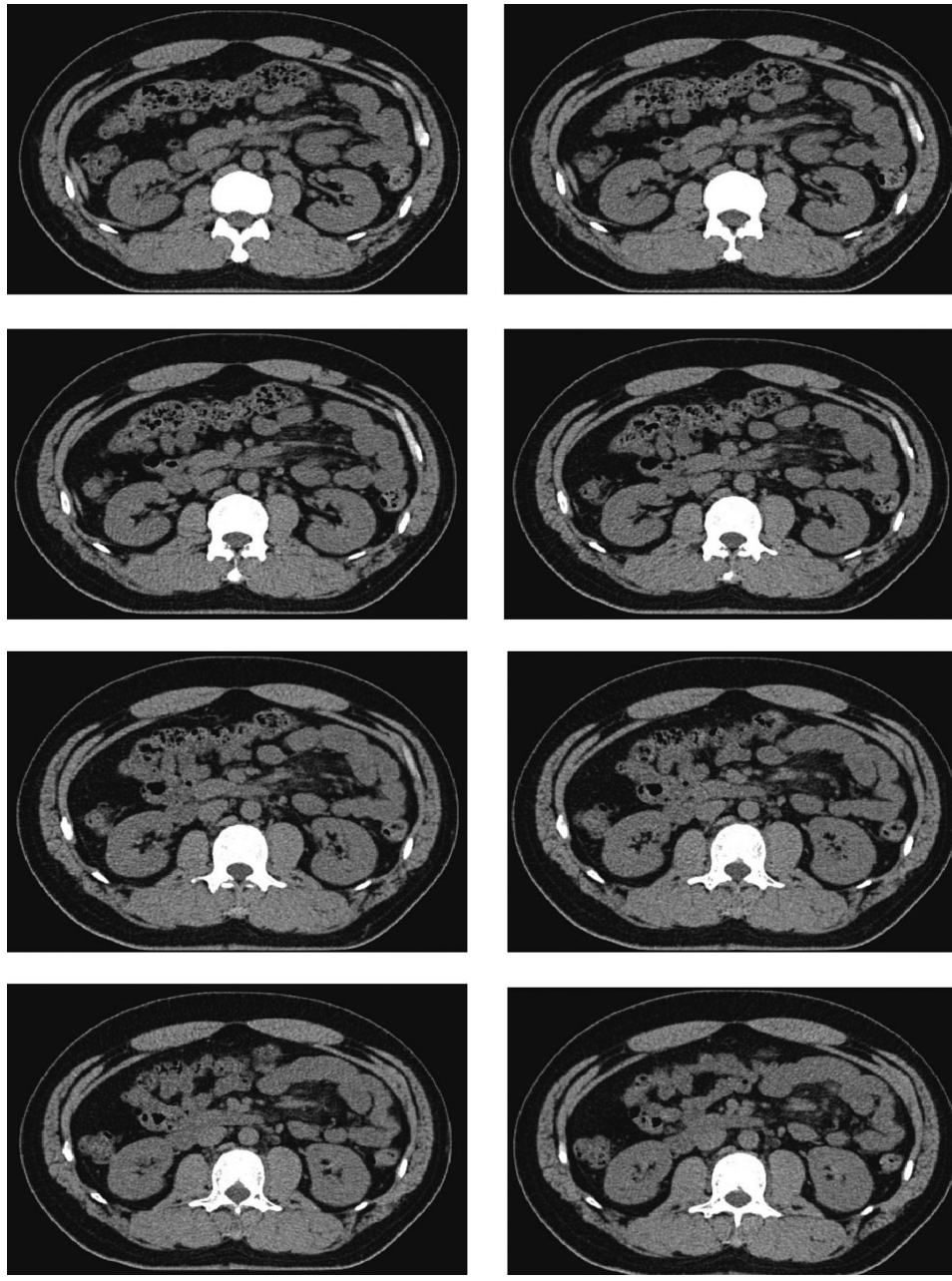

FIGURE 2. Abdominal CT image showing relieved densification of the mesenteric fat and thickened subcutaneous fat after half a year.

mesenteritis type (fibrosis) (McLaughlin, Filippone, & Maher, 2013). The histological differential diagnosis of mesenteric panniculitis includes lymphoma, liposarcoma, lipoma, retroperitoneal fibrosis, desmoid tumor, mesenteric inflammatory pseudotumor, gastrointestinal stromal tumor, Whipple's disease, mesenteric fibromatosis, and so on (Patrick et al., 2013).

Abdominal CT scan is the best way to diagnose mesenteric panniculitis. Findings include increased fat thickness of the involved mesentery and increased fat density due to inflammatory cells infiltration, fibrosis and enlarged lymph nodes, fat halo sign (fat ring sign) with a halo of fat surrounding the mesenteric vessel, pseudocapsule of a peripheral band limiting the inflammatory mesenteric mass from the surrounding normal folds, dilated or engorged mesenteric vessels, well-defined or poorly defined mesenteric mass (usually small bowel mesentery) with displacement of the bowel loops, strand-like densities around the mesenteric vessels, well-defined soft tissue nodules usually less than 5 mm, and variable manifestation of bowel obstruction (Issa & Baydoun,

2009; Mahafza et al., 2017; Patrick et al., 2013; Van Putte-Katier et al., 2014). When a misty mesentery is observed on CT scan, it is incumbent on the radiologist to consider and, if possible, exclude alternative density increase in regional mesenteric fat such as edema, hemorrhage, lymphedema, inflammation, and neoplasia, before suggesting the diagnosis (Patrick et al., 2013).

Sonography may show a well-defined hyperechoic abdominal mass with small, central hypoechoic areas. However, the fat in the mass usually reduces sonographic transmission and prevents the acquisition of full information. Color Doppler ultrasonography usually provides little data, except some isolated color spots of the mass in some cases. Plain radiography is usually negative in mesenteric panniculitis. Sonographic modifications in mesenteric panniculitis are usually subtle and often overlooked. The diagnosis can be potentially suggested by a change in the echogenicity of mesenteric fat associated with a decrease of mesentery compressibility. These changes are unspecific and may also be found in other diseases involving the mesentery (van Breda Vriesman, Schuttevaer, Coerkamp, & Puylaert, 2004).

On magnetic resonance imaging (MRI), a mesenteric mass is seen with intermediate signal intensity on T1-weighted images and with slightly higher signal intensity on T2-weighted images. Mesenteric lymph nodes are often seen within the region of segmental mesenteric stranding (Issa & Baydoun, 2009).

Management of Mesenteric Panniculitis

Mesenteric panniculitis is essentially a self-limited inflammatory process. It can recover spontaneously, run a stationary course, or progress to various degrees of fibrosis (Coulier, 2011). The disease is generally benign but occasionally may have an extremely erratic course with rare complications, including bowel obstruction or vascular compression (Hussein & Abdelwahed, 2014).

Mesenteric panniculitis is a rare disease, few cases are reported, and it is hard to assess the patient's response to the current therapeutic strategies. All the options are empiric, without the use of a measurement to determine the severity of symptoms and the effectiveness of treatment (Hussein & Abdelwahed, 2014). The drugs used in the treatment of mesenteric panniculitis are immunosuppressor or anti-inflammation agents, such as corticosteroids, colchicine, azathioprine, and thalidomide (Chechi, Alsallami, & Armstrong, 2015; Kgomo, Elnagar, & Mashoshoe, 2017; Miyake et al., 2003; Morii et al., 2012; Newman, Thahal, & Chaudhery, 2014). Exploratory surgery may be attempted if medical therapy fails or in the presence of fatal complications such as bowel obstruction or perforation (Fujikawa, Yasuhara, Matsumi, & Imagawa, 2014).

Our case showed that it may have a chronic inflammatory course and symptoms are consistent with most published articles; the steroid treatment and proper carbohydrate diet strategy was used successfully. It is suggested that medical treatment may be more effective than noted previously.

Conclusions

Mesenteric panniculitis is a rare, slowly progressive, benign, and chronic fibrous inflammatory disease that affects the adipose tissue of the mesentery. CT scan features of the disease have recently been delineated clearly, so surgical biopsy seems rarely necessary. Standard treatment strategy does not exist, and the current treatment mainly consist of immunosuppressor or anti-inflammation agents. We recommend resection only when the advanced inflammatory changes become irreversible, as in cases of bowel obstruction or other fatal situations. Overall prognosis is usually good and recurrence seems to be rare. ✪

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