Mesenteric panniculitis: Experience in our center


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INTRODUCTION

Mesenteric panniculitis is a nonspecific inflammatory process that affects the adipose tissue of the mesentery (1), and its clinical presentation varies greatly. Due to the limited specificity of routine radiological tests, and the inability to identify some risk factors, a definitive diagnosis of this entity usually requires a biopsy.

Nowadays this condition is considered to have several stages of progression. In mesenteric lipodystrophy, histopathological criteria for its diagnosis include a layer...
of foamy macrophages replacing mesenteric fat; mesenteric panniculitis shows an infiltrate made up of plasma cells, foreign-body giant cells, and foamy macrophages; in the final stage, histology shows collagen deposition and fibrosis.

Even though a number of established risk factors have been identified, in some cases the etiology remains unknown.

The present study, a retrospective analysis of 8 patients with mesenteric panniculitis diagnosed between May 2000 and December 2006, is aimed at analyzing causal factors for this condition. We believe that causal factors such as tobacco and its components might contribute to the etiology of mesenteric panniculitis, and should therefore be contemplated in future research.

CASE REPORTS

Average age in our series of patients was 63 years, with a male-to-female ratio of 3:1. Clinical presentation varied greatly (Table I); the most common manifestations were abdominal pain (n = 4) and asthenia (n = 4). Every patient had clinical manifestations at the time of diagnosis. Three cases presented with obstructive symptoms (two in the left colon and one in the small bowel). None of the patients had a background of abdominal trauma, while three had previously undergone abdominal surgery (appendectomy 50 years earlier, hysterectomy 25 years earlier, and cholecystectomy 30 years earlier). One patient had previously had a tuberculosis infection. Noticeably, most patients were or had been tobacco users (five were smokers and a further two were ex-smokers), and two had a history of alcohol abuse (one drinker and one ex-drinker). One patient developed follicular lymphoma over the follow-up period. None had a history of malignant disease. The average duration of their previous clinical course was 22 days; range 7-45 days.

Ultrasounds and CT scans were the most common imaging tests (Fig. 1). Lesions were seen as a thickening of the mesentery, which in five cases involved the small-bowel mesentery (Fig. 1). The surgical procedures used

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P: Patient; A/S: Age/Sex; Evolution: time with symptoms.
in these patients were left hemicolecotomy in one case, colostomy in another, and gastro-jejunostomy due to obstructive symptoms caused by mesentery thickening in a third patient. Mesentery biopsies were taken in the remainder of cases.

The histopathological study demonstrated fat necrosis, chronic inflammation, and fibrosis in all cases. There were fibrotic bands surrounding fat tissue and forming lobules. There was evidence of chronic inflammation formed mainly by lymphocytes and less frequently by eosinophils and plasma cells. In obstructive cases, intestinal layers were not infiltrated by inflammation, but extrinsically compressed. After a mean follow-up period of 15 months, both the inflammatory processes of the mesentery and clinical symptoms were fully resolved in all cases.

DISCUSSION

Mesenteric panniculitis is a rare inflammatory condition (1,2) characterized by chronic and nonspecific inflammation of the adipose tissue in intestinal mesenteries.

As a result of such a nonspecific clinical presentation, its definitive diagnosis usually requires a biopsy (3-6).

Kuhrmeier (7) found mesenteric panniculitis in approximately 1% of his autopsy studies. Most studies indicate that the disease is more common in males than in females 2-3:1, and several reports indicate that it is most common in Caucasian males (8-12). Incidence is higher over 50 years of age (13-15), and pediatric cases are exceptional, probably because children have less mesenteric fat when compared to adults (4,16-19).

Jura, who called this entity “retractile mesenteritis”, first described mesenteric panniculitis in 1924 (20). Odgen (21) coined the term “mesenteric panniculitis” for this condition during the 1960’s.

The disease has been referred to with many other names, including lipodystrophy, mesenteric liposclerosis, mesenteric manifestations of Weber-Christian disease, xanthogranulomatous mesenteritis, inflammatory pseudotumor, mesenteric lipogranuloma, systemic nodular panniculitis, liposclerotic mesenteritis, and mesenteric lipodystrophy (4,22,23). This variety of terms reflects both histological variations across cases, and a lack of conceptual consensus for which larger series would be required.

Kipfer (12) described that the pathogenic mechanism of retractile mesenteritis is a nonspecific response to a wide variety of etiological factors. Although various causal factors have been presently identified, its precise etiology remains unknown. Emory (4) reported a series in which 84% of patients had a history of either abdominal trauma or abdominal surgery. Durst et al. (10) suggested that recent surgery, which they recorded in 17% of their cases (mainly appendectomy or cholecystectomy), was a predisposing factor. Furthermore, the disease may to a great extent be related to other fac-
tors, such as mesenteric thrombosis, mesenteric arteriopathy, drugs, thermal or chemical injuries, vasculitis, avitaminosis, autoimmune disease, retained suture material, pancreatitis, bile or urine leakage, hypersensitivity reactions, and even bacterial infection (1,10,12,23). Other factors, such as gallstones, coronary disease, cirrhosis, abdominal aortic aneurysm, peptic ulcer, or chylous ascites, have been also related to this disease (24,25).

In our series, seven of eight patients were or had been smokers. Both tobacco and smoke by-products have been shown to exert many harmful effects in humans. These proven associations led the authors to consider that tobacco might also contribute to the onset of mesenteric panniculitis. Nicotine intake not only produces a sense of satisfaction that influences the neural reward system, but also has a wide array of independent effects, such as an increased inflammatory response in the digestive tract. Despite the reduced number of patients in our series, we believe that this factor might contribute to the etiology of mesenteric panniculitis, and that it should therefore be contemplated in future research.

Retractile mesenteritis has been related to malignant disease –15% of patients in a series by Kipfer et al. developed malignant lymphomas during follow-up (12), and Daskalogiannaki (1) reported that sclerosing mesenteritis related to malignancies such as lymphoma, lung cancer, melanoma, or colon cancer in over 69% of cases. References in the literature also relate this disease to a wide variety of neoplasms, including renal cell cancer, myeloma, gastric carcinoma, chronic lymphocytic leukemia, Hodgkin’s disease, large cell lymphoma (or giant-cell carcinoma), carcinoid tumor, and thoracic mesothelioma (2,4,26-29). One patient in our series developed follicular lymphoma after a primary diagnosis of mesenteric panniculitis.

In over 90% of cases mesenteric panniculitis involves the small-bowel mesentery, although it may sometimes involve the sigmoid mesentry (30) (Fig. 2). It may exceptionally affect other areas, such as the peripancreatic region, omentum, retroperitoneum, or pelvis (31). The lesion presented as a thickening of the mesentery, which in five cases involved the small bowel (Fig. 2).

The disease is often asymptomatic. Accordingly, Kipfer et al. (12), found that 43% of their patients exhibited no symptoms. When present, clinical symptoms vary greatly, and may include abdominal tenderness, anorexia, abdominal pain, abdominal fullness, nausea, pyrexia, and weight loss (19,32). On occasions, the disease may also present with merely a single or multiple palpable masses. Exceptionally, rectal bleeding, jaundice, gastric outlet obstruction, and even acute abdomen have been reported (2,4,10,33) The most common clinical manifestations in our series were abdominal pain (n = 4) and asthenia (n = 4). Three cases presented with obstructive symptoms (Table I).

Small-bowel obstruction has rarely been reported as a complication of this disease (10,34,35). Rarer still is colonic obstruction, reported three times in a series by Kikiro and Edis (35). This manifestation is more frequent in the retractile mesenteritis stage (36) (Table I). Such a wide variety of manifestations means that a large number of illnesses must be considered for differential diagnosis (Table II).

Mean clinical progression is 6 months, ranging from 2 weeks to 16 years. Although laparotomic or laparoscopic mesentery biopsies are often necessary for diagnosis, they are nonetheless a controversial issue. Authors such as Monahan (37) suggest that a conclusive diagnosis requires surgery, even when CT has already suggested the condition. Janisch, however, suggested that combined ultrasounds and fine-needle aspiration biopsy could help establish the diagnosis without resorting to laparotomy (25), while Badiola-Varela (38) suggested that surgery could be avoided if the characteristics of mesenteric panniculitis were seen in a CT
scan. Blood tests tend to be within normal ranges. Neutrophilia and even increased ESR or anemia have occasionally been reported in the retractile mesenteritis stage (39).

Although gastrointestinal bowel examination results are usually normal, in the retractile mesenteritis stage they sometimes reveal an extrinsic mass effect displacing the small bowel (40). With MRI and CT, especially 3D-CT, the disease is revealed as a heterogeneous mass surrounding the mesenteric vessels (27,32,41). Sabate et al. (17) reported that one of the characteristic CT features was the presence of a "tumoral pseudocapsule" with a hyperattenuating rim, known as the "fat-ring sign", surrounding the mass (17). The intestinal wall is sometimes found to be thickened due to lymphatic obstruction.

Histopathologically, the disease progresses in three pathoanatomical stages:

The first stage is mesenteric lipodystrophy. A layer of foamy macrophages replaces mesenteric fat. Acute inflammatory signs are minimal or non-existent; the disease tends to be clinically asymptomatic and prognosis is good.

In the second stage, termed mesenteric panniculitis, histology reveals an infiltrate made up of plasma cells and few polymorphonuclear leukocytes, foreign-body giant cells, and foamy macrophages. Small-bowel segments can show slight thickening and lymphatic distension. Most common symptoms include fever, abdominal pain, and malaise.

The final stage is retractile mesenteritis. Histology shows collagen deposition, fibrosis, and inflammation (11). Collagen deposition leads to scarring and retraction of the mesentery, in turn leading to the formation of abdominal masses (12) and obstructive symptoms.

Colonoscopy is usually unrevealing, since mesenteric panniculitis is extrinsic to the bowel. Paracentesis revealing inflammatory cell populations without mitotic figures can also aid diagnosis.

According to the Mayo Clinic series of 1974, small-bowel mesentery involvement (Figs. 3 and 4) allows a classification of mesenteric panniculitis into three groups (12) (Table III).

Overall, the clinical prognosis of mesenteric panniculitis is good. While it resolves spontaneously in most cases, palpable masses may often be found between 2 and 11 years after diagnosis (10).

The problem does not always self-resolve, however, especially in patients with associated comorbidity. In such cases, several types of treatment have been proposed. According to Kikiros and Edis (35), steroid therapy can reduce inflammation and improve the course of disease, especially when histological tests show an inflammatory cell response with minimal fibrosis. Bush et al. (9) reported a successful therapy with cyclophosphamide in a case where prednisone had failed. Progesterone and its analogs can inhibit fibroblast proliferation due to the presence of progesterone receptors in the nucleus and cytoplasm of fibroblasts found in desmoid tumors and non-tumoral fibrotic tissue (42).

Other studies have reported treatments with colchicine, azathioprine, tamoxifen, antibiotics, radiotherapy, or emetine (13,42,43).

The surgical management of this disease is restricted to cases presenting as inflammatory bowel obstruction and mesenteric scarring, and requires partial resection, bypass, or colostomy. A total resection of the mass (Fig. 3a) is usually impossible, and is not considered beneficial (44).

Prognosis in this pathology is good, and recurrence is rare (19). In a 1977 review of 68 cases reported by 23 authors, Durst et al. concluded that the disease was benign (10). An 84-patient study by Emory (4) recorded only three deaths, all of them following postoperative compli-
Type 2: Isolated nodular mass at the root of the mesentery from the root to the borders of normal small bowel

Type 1: The most common type. A diffuse, thickened, gray-yellow mesentery from the root to the borders of normal small bowel

Type 3: The mesentery contains multiple discrete nodules of varying size

cations. In our series, the condition resolved spontaneously in all patients, and none of them needed steroids after primary diagnosis.

CONCLUSION

The etiology of mesenteric panniculitis remains a controversial issue. Retrospective analyses of many series have identified potential risk factors, and disease onset has been related to a wide range of agents. In the present series, the high prevalence of tobacco use has led us to suggest a new hypothesis: a possible association between panniculitis and smoking. This could explain such low incidence rates in pediatric patients, and the onset of disease when they are passive smokers.

Tobacco and nicotine have a variable effect on many chronic diseases, and in most cases they promote inflammation (45,46). Their activity on inflammation in airways, arterial walls, oral cavity, and upper and lower digestive tract down to the duodenum is complex and independent (47-50). Our research showed a strong relationship between tobacco and panniculitis. However, considering the high prevalence of smoking in the population at large, such a relationship could be merely coincidental. We therefore recommend further research into the potential association between panniculitis and smoking.

REFERENCES


