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Acute Recurrent Exacerbations of Mesenteric Panniculitis With Immunosuppressive Therapy: A Case Report and a Brief Review

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Abstract

Mesenteric panniculitis (MP) is a rare, benign, and idiopathic disorder characterized by chronic inflammation of the mesenteric adipose tissue of the small intestine. The exact etiology of MP is unknown and its associations with underlying malignancies continues to be poorly understood. In this case report, we describe a rare case of acute exacerbations of MP in a middle-age female with a known past medical history of non-Hodgkin's lymphoma in remission and small bowel resection for a localized carcinoid tumor. The patient was diagnosed with MP 4 years ago and started on tamoxifen therapy with adequate control of her symptoms. Last year, she reported to the emergency department with multiple episodes of sudden-onset, severe, and localized right upper quadrant abdominal pain and nausea without vomiting. She was diagnosed with an acute exacerbation of MP and a decision was made to add 60 mg prednisone daily in addition to her tamoxifen regimen. She remained symptomatically stable for the next 6 months after the start of dual therapy with tamoxifen and prednisone. However, for the past 6 months, the patient reported to the emergency department on an average of 2 times/month with the same recurrent symptoms despite high compliance with tamoxifen and prednisone therapy. She was admitted for her pain management and her dose of prednisone was increased and she was subsequently discharged home with improvement of her symptoms. Her tamoxifen was switched to mycophenolate on her follow-up visit with gastrointestinal clinic, and her disease has remained stable for the past 2 months. Our case report discusses in-depth the literature on MP and its management. We also detail the steps in management of a rare case of recurrent acute exacerbations of MP despite the patient being on immunosuppressive therapy.

Keywords

mesenteric panniculitis, fibroinflammatory disorder

Introduction

Mesenteric panniculitis (MP) is a term that was first used by Odgen et al in 1965 to describe a condition affecting the adipose tissue of the bowel and mesentery.[1] It is a rare, benign, idiopathic disorder characterized by chronic inflammation of the mesenteric adipose tissue of the small intestine. Literature reports a prevalence of 0.16% to 7.80% with most patients presenting in middle to late adulthood.[2] More commonly seen in Caucasian men, it has a male predominance with a male-to-female ratio if 2-3:1.[3] However, recent literature suggests that there might be underreporting of MP, thereby making it difficult to access the actual incidence and prevalence. There is a paucity of data on MP with no large retrospective or prospective studies. MP is a spectrum of disease encompassing nonspecific inflammation of the mesenteric fat, which may ultimately lead to fibrosis and retraction. It can be classified into 2 pathological subgroups based on

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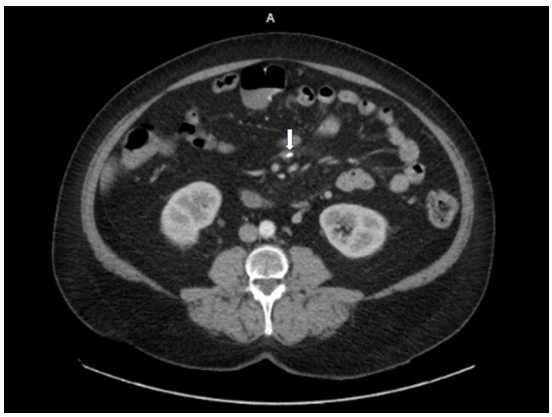

Figure 1. A computed tomography scan demonstrating the presence of an 11 × 9 mm partially calcified nodule (arrow) at the root of the mesentery with fat stranding.

histopathological findings: inflammatory lesion predominant MP and fibrotic lesion predominant sclerosing mesenteritis.[4,5] MP may occur independently or in conjunction with other disorders but exact etiology is still unknown. Proposed causes of MP include autoimmune disorders, infections, ischemia of the mesentery and trauma, and it may also be associated with prior abdominal surgery, malignancy, vasculitis, and other granulomatous disorders.[6] MP is usually asymptomatic but may present with benign symptoms including abdominal pain, fever, palpable abdominal mass, and gastrointestinal disturbances. Laboratory investigations in MP may show some elevation of the markers of inflammation such as erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) and can be used as a guide for therapy. Computed tomography (CT) scans play an important role in the diagnosis of MP but the diagnosis is confirmed on biopsy. Treatment for MP is focused mainly on immunosuppression.[7] Our case report discusses the association and management of MP described in the literature. Although there is little consensus on a specific treatment protocol, multiple case reports exist that describe the treatment strategies available. However, there is a dearth of data on the management of recurrent exacerbations despite immunosuppression. Hence, we detail the patient-centric approach for the management of a rare case of recurrent acute exacerbations of MP despite the use of 2 immunosuppressants, primarily focusing on short-term and long-term management.

Case Presentation

A 55-year old female with a past medical history of non-Hodgkin's lymphoma in remission, status post small bowel resection at the age of 49 for a localized carcinoid tumor, type 2 diabetes mellitus, and hypertension came to the emergency department (ED) with complaints of nausea and severe abdominal pain. The patient reported sudden localized right upper quadrant abdominal pain, which worsened over the previous day. The pain was severe in intensity, stabbing and squeezing quality, nonradiating, associated with nausea without vomiting. However, the patient noted improvement in the pain and nausea after oral intake, and worsening of the pain on defecation. She reported increased bowel movements with loose stools since the previous day without hematochezia, melena, or mucous in the stools. She denied fevers, chills, dysuria, increased frequency, or burning micturition. The patient was diagnosed with non-Hodgkin's lymphoma about 10 years ago and was treated with the R-CHOP regimen (rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone) for 6 cycles, 3 weeks apart. After the treatment, the patient's lymphoma stayed in remission. About 4 years ago, the patient was diagnosed with MP via a biopsy at an outside facility showing fat necrosis and chronic inflammatory infiltrates of the mesentery after a CT scan was ordered due to high suspicion for return of the non-Hodgkin's lymphoma. After extensive discussions with the patient and her unwillingness to start the first-line corticosteroids therapy due to concerns of side effects, she was started on tamoxifen, which provided adequate symptom control with minimal exacerbations. Last year, she started to have recurrent acute exacerbations of her underlying pathology leading to multiple ED visits. Hence, a decision was made to start her on 60 mg prednisone daily with further optimization of dose in the coming months, along with the tamoxifen. She reported a significant decrease in the acute exacerbations on tamoxifen and prednisone therapy, but not a complete resolution of her symptoms, for about 6 months after initiation of the therapy. However, over the last 6 months, she has had recurrent ED visits averaging 2 times/month with complaints of nausea and severe abdominal pain and swelling of the right upper quadrant lasting about 1 to 2 days.

On examination, the patient was 159 cm tall, weighed 84 kg, and had a body mass index of 33.2 kg/m^2. Her heart rate was 120 beats per minute, blood pressure 140/90 mm/Hg, and temperature 98.2 °F. On abdominal examination, a localized right upper quadrant swelling was noted along with severe tenderness and guarding of the abdomen. Laboratory investigations revealed mildly elevated aspartate transaminase at 58, alanine transaminase 65, and alkaline phosphatase 56, an ESR of 100 mm/h, and a CRP of 190 mg/L, which was similar to the last ED visit. CT scan of the abdomen showed an area of chronic inflammation in the right upper quadrant along with the presence of an 11 × 9 mm partially calcified nodule at the root of the mesentery (Figure 1), which had remained stable from previous studies. During the inpatient stay, the management was focused mainly on pain control along with increasing her prednisone dose to 60 mg daily to suppress the inflammatory process. Her condition improved significantly and she was subsequently discharged home. As outpatient, due to the ineffectiveness of tamoxifen, it was switched to mycophenolate mofetil for better symptom control and to prevent recurrent acute exacerbations. The patient reported

excellent symptom control and minimum exacerbations of her MP on mycophenolate mofetil.

Discussion

Mesenteric panniculitis is a rare, nonspecific fibroinflammatory disorder of unknown etiology affecting primarily the mesenteric adipose tissue and rarely other sites like the mesocolon or the omentum. Although literature reports a 0.16% to 7.80% prevalence range for MP, it is being recognized with increasing frequency owing to the increased use of abdominal diagnostic imaging and identification of specific signs on CT scans.[2] MP is believed to be a sexually dysmorphic disease with an overall male predominance and a male to female ratio of 2-3:1.[3] A recent study published on 613 patients reported both a high prevalence of MP ranging from 3.4% to 7.8% depending on the CT criteria used and a slight female predominance.[8] But most studies in literature report a lower prevalence and a male predominance. MP continues to be reported more frequently in adults over 50 years of age, with a mean age of 66.6 ($\pm$11.2) years.[2] Children are rarely affected probably because they have less mesenteric fat than adults.[9] However, due to the paucity of data in terms of only case reports and small retrospective studies, the actual trends of MP in terms of sexual dysmorphism, age, and prevalence may be skewed.

About 90% of the cases of MP involve the small bowel mesentery with a small percentage involving the sigmoid mesentery.[10] Rarely, other sites such as the mesocolon, peripancreatic region, omentum, retroperitoneum, or pelvis may be involved.[11] MP is a spectrum of disease encompassing nonspecific inflammation of the mesenteric fat, which may ultimately lead to fibrosis and retraction.[4] It can be classified into 2 pathological subgroups[4,5]:

1. *Inflammatory lesions*: when inflammation and fat necrosis of the adipose tissue of the mesentery predominate over fibrosis, it is called MP.
2. *Fibrotic lesions*: when fibrosis and retraction of the adipose tissue of the mesentery predominate over inflammation, it is referred to as sclerosing mesenteritis.

The exact pathophysiological mechanism leading to the development of MP remains unknown. However, it is believed to be a nonspecific response to a wide variety of stimuli. Some proposed causes of MP include autoimmune disorders, bacterial infections, ischemia of the mesentery and trauma, and it may also be associated with prior abdominal surgery, malignancy, vasculitis, and other granulomatous disorders.[6] Our patient had a prior history of non-Hodgkin's lymphoma and abdominal surgery for the resection of a carcinoid tumor. Some studies report an association as high as 69.3% of MP with malignancies such as lymphomas, breast cancer, colon cancer, lung cancer, and melanoma.[12] The risk of malignancy can be about 5 times higher in the presence of MP, with MP more frequently seen in patients with non-Hodgkin's lymphoma.[13] The association of MP with abdominal surgery is still debated with some studies reporting that 84% of the patients with MP have a previous history of surgery, while others reporting this rate to be much lower at 4.76%.[3,5] On review of literature, Kara et al reported that abdominal surgery is one of the potential etiological factor for MP, but could not identify a strong relationship between the two.[12] Furthermore, MP may also be related to other factors such as mesenteric thrombosis or arteriopathy, thermal or chemical injuries, vasculitis, avitaminosis, retained suture material after surgical intervention, pancreatitis, urine leakage, hypersensitivity reactions, gallstones or bile leakage, coronary disease, cirrhosis, abdominal aortic aneurysm, peptic ulcer, or chylous ascites.[3,14,15] A strong relationship between tobacco consumption and panniculitis has also been identified.

Mesenteric panniculitis is usually asymptomatic in most patients, but when symptomatic, the clinical manifestations usually vary greatly and may be nonspecific. The symptoms depend on the size and location of the mass and its relationship with the bowel, vessels, and lymphatics.[16] In a recent clinical study, abdominal pain was present in 72% of the patients, making it the most common symptom of MP. The patient described in our case report also described severe abdominal pain as the cause of recurrent ED visits. Other symptoms may include nausea, vomiting, diarrhea, constipation, fever, weight loss, and chylous ascites. Rarely, rectal bleeding, jaundice, gastric outlet obstruction, and acute abdomen may be present.

In MP, routine laboratory investigations are usually normal. There may be elevations in ESR and CRP, which may serve as markers for the inflammatory process and help guide therapy. CT scans have started to play an increasingly greater role in the diagnosis of MP. Some common features on the CT scan, which may help radiologists identify MP include the following:

1. Hyper attenuating pseudo-capsular sign
2. Fatty ring sign
3. Soft tissue density nodules
4. Fatty mass located in the direction of the small bowel mesentery
5. Peripancreatic location
6. Calcifications
7. Cystic components

The CT scan of our patient demonstrated an area of chronic inflammation in the right upper quadrant along with the presence of an 11 $\times$ 9 mm partially calcified nodule at the root of the mesentery (Figure 1). Although radiological imaging may guide clinicians toward a possible diagnosis of MP, a definitive diagnosis of MP is established with the help of a biopsy from the lesion. On histology, the disease progresses mainly in 3 stages. However, in most cases, all 3

findings usually co-exist, thereby making an exact diagnosis more difficult. In some cases, a histopathological analysis from the biopsy of the mesenteric tissue may reveal nonspecific signs of chronic inflammation.[17] The 3 stages that may co-exist in MP include[14] the following:

1. *Mesenteric lipodystrophy*: characterized by the replacement of mesenteric fat by a layer of foamy macrophages. It is usually a clinically asymptomatic phase with a good prognosis.
2. *Mesenteric panniculitis*: characterized by the infiltration of plasma cells, polymorphonuclear leukocytes, foreign-body giant cells, and foamy macrophages. Symptoms may include abdominal pain, malaise, and fevers.
3. *Retractile mesenteritis*: characterized by collagen deposition leading to scarring and retraction of the mesentery, fibrosis, and inflammation. Symptoms of obstruction mainly predominate.

There is no consensus among physicians for the treatment of MP and therefore no specific treatment protocols exist. The choice of treatment is guided by symptomatology and is usually tailored to individual patients. If the condition is asymptomatic, medical therapy may not be necessary and a "wait and watch" approach may be used. If the patient is symptomatic, medical therapy is used for symptom control and/or to produce regression of the disease. The medical therapy in MP is mainly focused on immunosuppression. Some common drugs used in the medical management of MP include tamoxifen, prednisone, colchicine, azathioprine, cyclophosphamide, infliximab, pentoxifylline, mycophenolate, and thalidomide. Corticosteroids, in particular prednisone, is usually the first-line therapy while immunosuppressive drugs are used as second-line agents in cases of symptomatic recurrence or failure of first-line therapy. The quantitative data on the exact efficacy and safety of prednisolone in patients with MP is currently unknown as most literature on MP exists in the form of case reports. However, majority of these case reports note a significant improvement in MP on corticosteroid therapy. Some studies have also reported a good clinical response of MP to nonsteroidal anti-inflammatory drugs and/or antibiotics, pointing toward a possible infectious source of MP.[4] Low-dose naltrexone is a promising new therapy for MP, which works through immune system modulation.[18] In our case report, the patient was initially started on a tamoxifen regimen. Tamoxifen is a selective estrogen receptor modulator, which has shown benefit in cases of MP through the inhibition of fibroblast TGF-β1 production.[19] The patient did show significant improvement of her symptoms on tamoxifen therapy but due to a relapse of her symptoms, a decision was made to start her on prednisone with gradual optimization of the dose. In a small study with 92 patients, it has been reported that a combination treatment with tamoxifen and glucocorticoids lead to significant symptomatic improvement in 60% of the patients.[11] The patient reported symptomatic relief with minimal exacerbations on this combination therapy for 6 months, but she again started to have an acute exacerbation of her underlying pathology and recurrent ED visits due to the abdominal pain. This is a rare presentation and no literature currently exists on the management of acute exacerbations of MP despite therapy with 2 immunosuppressive agents. In such cases for in-patient management, we focused on increasing the dose of the corticosteroids to suppress the inflammatory process while also focusing on adequate pain control. As outpatient, we focused on a change in the immunosuppressive therapy. For our patient, after discharge from the hospital, her tamoxifen was switched to mycophenolate mofetil with regular follow-up with her rheumatologist and actual improvement in her symptoms leading to fewer emergency room visits for the next 2 months.

Overall, the course of MP is usually benign with treatment mainly focused on symptomatic management through immunosuppression. Rarely, MP may cause bowel perforation, bowel obstruction, bowel ischemia, and renal failure due to ureteral stenosis, making it a potentially dangerous medical condition requiring urgent intervention.[20]

Conclusion

Mesenteric panniculitis is a rare, nonspecific fibroinflammatory disorder affecting primarily the mesenteric adipose tissue and rarely other sites like the mesocolon or the omentum. The exact etiology of MP is unknown but multiple associations have been identified. CT scan is a great imagining modality of the diagnosis of MP. However, a definitive diagnosis is made after tissue biopsy. The treatment of MP is based on symptomatology. An asymptomatic patient needs no medical therapy, while the therapy for symptomatic patients is focused on immunosuppression with corticosteroids being the first choice and immunosuppressive agents as the second choice of therapy. The course of MP is usually benign with a good overall prognosis.

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Verbal informed consent was obtained from the patient(s) for their anonymized information.

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