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# Exploring Mesenteric Panniculitis: Etiology, Clinical Features, and Advances in Diagnosis and Treatment

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**ABSTRACT**

Mesenteric panniculitis is a rare disease characterized by chronic inflammation of the adipose tissue of the mesentery. Also known as mesenteric lipogranulomatosis or mesenteric retraction syndrome, this condition presents with the formation of inflammatory nodules in the mesentery, composed of adipose tissue, inflammatory cells, fibrosis and vascular changes.

Although the exact etiology of mesenteric panniculitis is not yet fully understood, a relationship with abnormal immune responses, genetic predisposition, autoimmune diseases and previous infections has been suggested. In addition, a possible association with systemic diseases such as rheumatoid arthritis, Crohn's disease and systemic lupus erythematosus has been raised.

Patients with mesenteric panniculitis may present with a variety of symptoms, including chronic and diffuse abdominal pain, tenderness in the affected area, weight loss, nausea, vomiting and changes in bowel patterns. In more severe cases, inflammatory nodules may compress adjacent structures, which can lead to complications such as intestinal obstruction or mesenteric ischemia.

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## INTRODUCTION

Mesenteric panniculitis is a rare and poorly understood disease characterized by chronic inflammation of the adipose tissue of the mesentery, which is the tissue that connects and supports the abdominal organs. This condition is also known as mesenteric lipogranulomatosis or mesenteric retraction syndrome.1

Mesenteric panniculitis is characterized by the presence of inflammatory nodules or masses in the mesentery, which can vary in size and number. These nodules are composed of a combination of adipose tissue, inflammatory cells, fibrosis and vascular changes.2

Although the exact cause of mesenteric panniculitis is not completely known, it is believed that it may be related to an abnormal immune response, genetic factors, autoimmune diseases or previous infections. It has also been suggested that mesenteric panniculitis may be associated with systemic diseases, such as rheumatoid arthritis, Crohn's disease, and systemic lupus erythematosus.3

Symptoms of mesenteric panniculitis can vary, but commonly include chronic, diffuse abdominal pain, tenderness in the affected area, weight loss, nausea, vomiting, and changes in bowel habits. In some cases, inflammatory nodules may compress adjacent structures, which can lead to complications such as intestinal obstruction or mesenteric ischemia.4,5

The diagnosis of mesenteric panniculitis is based on a combination of clinical findings, imaging studies (such as abdominal computed tomography), blood tests and, in some cases, biopsy of the affected tissue.6

Treatment of mesenteric panniculitis usually involves a multidisciplinary approach and may vary depending on the severity of symptoms and associated complications. Anti-inflammatory drugs and steroids may be used to control inflammation and relieve symptoms. In severe or refractory cases, other treatments may be considered, such as immunosuppressants or surgery to remove the inflammatory nodules or affected tissue.7

In summary, mesenteric panniculitis is an uncommon inflammatory disease affecting the adipose tissue of the mesentery. It is characterized by the presence of inflammatory nodules in the mesentery and can cause chronic abdominal pain, changes in bowel habits and other complications. Diagnosis is made by imaging studies and

blood tests, and treatment may include anti-inflammatory drugs, steroids or other therapeutic options depending on the severity of the disease.7

**EPIDEMIOLOGY**

Mesenteric Panniculitis is characterized by being a rare disease with a relatively low incidence in the general population. The exact prevalence of this condition is not well established due to a lack of comprehensive epidemiological studies and the difficulty in accurately diagnosing the disease. However, it is estimated that Mesenteric Panniculitis affects less than 1% of the population.

This disease has been described in individuals of different ages but is most commonly observed in middle-aged and older adults, with a slight predominance in men. No clear association with a specific ethnic or racial group has been found.

Regarding the incidence of Mesenteric Panniculitis, it is believed to be underdiagnosed and underestimated due to its asymptomatic nature or the presence of nonspecific symptoms that can be confused with other more common abdominal diseases. Additionally, the lack of awareness and knowledge about this condition can contribute to its underdiagnosis.

No specific risk factor has been identified for the development of Mesenteric Panniculitis, although a possible association with autoimmune disorders, inflammatory bowel diseases, and exposure to certain infectious agents has been suggested. However, further studies are needed to better understand the risk factors and underlying mechanisms of this disease.

**PATHOPHYSIOLOGY**

Mesenteric Panniculitis is not yet fully understood due to the rarity of the disease and the lack of comprehensive research. However, several theories have been proposed regarding the underlying mechanisms contributing to the development and progression of this condition.

It is believed that the pathophysiology of Mesenteric Panniculitis involves a dysregulated chronic inflammatory response in the adipose tissue of the mesentery. This inflammatory response can be triggered by autoimmune, infectious, ischemic, or traumatic factors, although the exact cause has not yet been established.

It has been postulated that Mesenteric Panniculitis may result from an autoimmune reaction, where the individual's immune system mistakenly attacks the adipose tissue of the mesentery, leading to inflammation and the formation of characteristic inflammatory nodules. An association with systemic autoimmune disorders such as rheumatoid arthritis or systemic lupus erythematosus has also been proposed, further supporting the theory of an autoimmune component in the pathogenesis of the disease.

Additionally, it has been suggested that Mesenteric Panniculitis may be related to the obstruction of blood vessels that supply the adipose tissue of the mesentery. This obstruction can lead to tissue ischemia, accumulation of inflammatory cells, and activation of the chronic inflammatory process.

Another proposed theory involves a possible association with chronic or recurrent bacterial infections in the gastrointestinal tract. It has been observed that some cases of Mesenteric Panniculitis are preceded by episodes of peritonitis or appendicitis, suggesting a potential connection between infection and the inflammatory response in the mesenteric tissue.

In summary, the pathophysiology of Mesenteric Panniculitis involves a dysregulated chronic inflammatory response in the adipose tissue of the mesentery, which can be mediated by autoimmune, infectious, ischemic, or traumatic factors. Further research is needed to better understand the underlying mechanisms and the interaction of these factors in the development and progression of this rare disease.

**CASE PRESENTATION**

A 36 year old woman with a past medical history of a gastric bypass 2 years ago and a breast augmentation surgery 11 years ago, was admitted to our hospital with chief complaints of nausea and abdominal pain sitting in the right lower quadrant associated with fever (up to 39°c).This symptomatology had evolved for approximately 48 h.

Patient reported an upper gastrointestinal bleeding episode 2 weeks prior the admission. She was initially seen by gastroenterologist at another hospital where the initial screening tests showed abnormal hemoglobin (6mg/dl) and upper gastrointestinal endoscopy revealed a peptic ulcer (Forrest III). She received a transfusion of 2 units of packed red blood cells and proton pump inhibitor therapy with improvement of the symptoms.

Ten days later she presented to her local clinic with severe right right lower quadrant abdominal pain, and fever of 39°C. This time her labs showed increased of hemoglobin to 10mg/dl with leukocytosis and neutrophilia (WBCs 14.600, N 76.2%). Bedside ultrasonography was obtained which revealed a non specific abdominal mass on the right side. Abdominal CT scan reported an appendix diameter of 7mm, with inflammatory fatty tissue extending up to ascending colon, so she was referred to our hospital with a presumption diagnosis of appendicitis.

On arrival to our hospital she was still in pain and febrile. Abdominal examination revealed an ill-defined lump about 6x5x4 cm in the right flank region extending up to the right iliac fossa. Local tenderness was present over the lump with aggravation of pain on medium and deep palpation. Bowel sounds were present. Laboratory test showed persistent neutrophilic leukocytosis (WBCs 13200/μL; neutrophils 82%). Abdominal ultrasound showed minimal intra-abdominal free fluid and a 59.9x 36.4x 46.5 mm amorphous image on the right flank (Fig. 1).

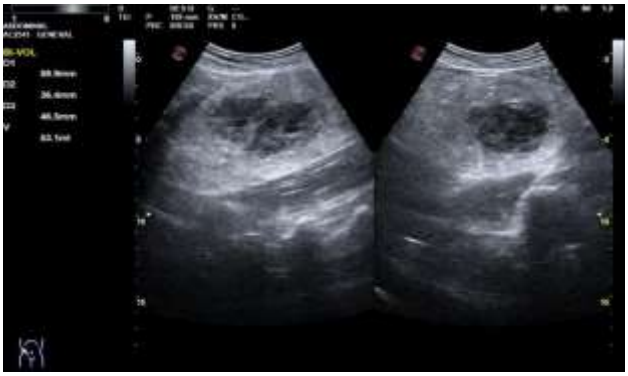

**Fig.1 Intra-abdominal free fluid**.

CT scan was performed and revealed a 69 x 90 x 107mm heterogeneous hypodense image suggesting an encapsulated collection adjacent to the ascending colon, and posterior to the cecum with significant inflammatory reaction, suggestive of retrocecal appendicitis (Fig. 2).

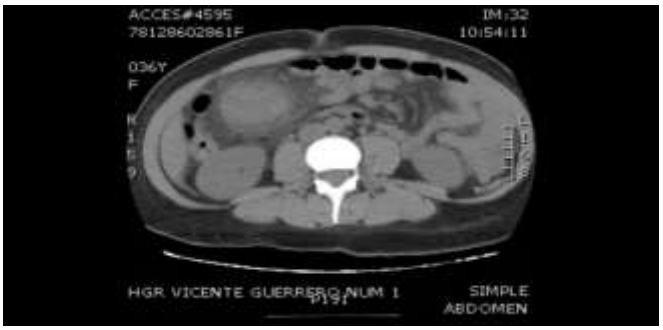


**Fig. 2 retrocecal appendicitis.**

Because of progressive worsening of the clinical situation, the patient was taken for emergency laparotomy. Intraoperatively, 8x5x6cm abscessed tumor was located on greater omentum near its insertion into the transverse colon which was resected (Fig. 3).

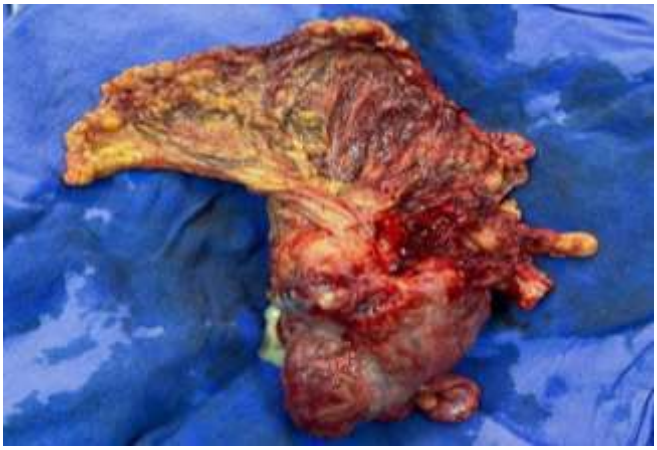

**Fig.3 Post surgical transverse colon.**

Pathology revealed extensive abscessed acute panniculitis with accentuated reactive fibrosis, negative for malignancy (Fig. 4). The patient had an uneventful postoperative course.

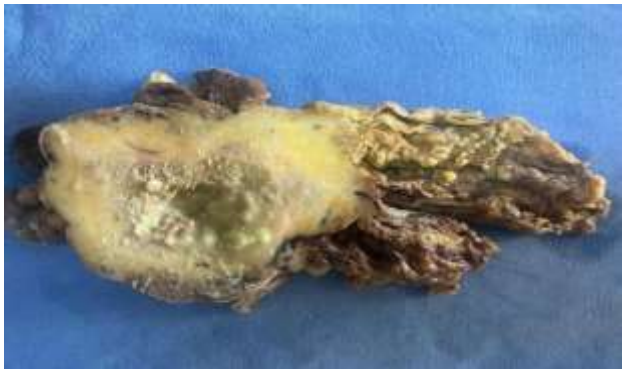

**Fig. 4 Pathology tissue specimen.**

## CONCLUSIONS

In conclusion, mesenteric panniculitis is a rare and poorly understood disease characterized by chronic inflammation of the adipose tissue of the mesentery. Although the exact etiology has not yet been fully established, it is believed that immunologic factors, genetics, and the presence of autoimmune diseases may play a role in its development.7

Mesenteric panniculitis presents with a wide range of clinical manifestations, including chronic abdominal pain, tenderness in the affected area, weight loss, and changes in bowel patterns. In addition, the formation of inflammatory nodules in the mesentery can lead to serious complications, such as intestinal obstruction and mesenteric ischemia.7

The diagnosis of mesenteric panniculitis can be challenging, and is based on clinical evaluation, imaging studies, blood tests, and sometimes biopsies of the affected tissue. Abdominal computed tomography plays a crucial role in identifying inflammatory nodules and assessing the extent of the disease.8

The management of mesenteric panniculitis requires a multidisciplinary approach, with the aim of controlling inflammation, relieving symptoms and preventing or treating complications. Treatment may include the use of anti-inflammatory drugs, corticosteroids and, in severe or refractory cases, immunosuppressants. In select cases, surgery may be necessary to remove inflammatory nodules or affected tissue.9

Although mesenteric panniculitis is a chronic disease with a variable clinical course, early recognition and appropriate treatment can improve clinical outcomes and quality of life for affected patients. Further research is needed to better understand the etiology and underlying mechanisms of this disease, which may lead to more effective and personalized therapeutic approaches in the future.10

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