MESENTERIC PANNICULITIS IN THE ELDERLY – UPDATE ON DIAGNOSTIC AND THERAPEUTIC APPROACH

Francisco Pinheiro*, Amália Rêgo**, and Irami Araújo-Filho***,1

*Full Professor For The Masters In Biotechnology From The Potiguar University - LAUREATE INTERNATIONAL UNIVERSITIES – Ph.D. In Health Science - NATAL /BRAZIL. **Director Of The School Of Health Potiguar University - LAUREATE INTERNATIONAL UNIVERSITIES – Ph.D. In Health Science - NATAL /BRAZIL. ***Full Professor Of General Surgery At The Rio Grande Do Norte Federal University – Ph.D. In Health Science - NATAL /BRAZIL. Full Professor, Department Of Surgery, Potiguar University – LAUREATE INTERNATIONAL UNIVERSITIES – NATAL /BRAZIL

ABSTRACT
The Mesenteric Panniculitis (MP) is a rare, non-specific inflammatory condition, mainly affecting the benign intestinal mesentery. It is usually diagnosed primarily during the sixth and seventh decade of life and seems to be two times more common in men than in women. The etiology of SM remains unknown, although several mechanisms have been suggested, including surgery or abdominal trauma before, autoimmunity, paraneoplastic syndrome, ischemic injury, and infections. The major signs and symptoms are abdominal pain, the presence of palpable abdominal mass, nausea and vomiting, bowel changes, weight loss, small bowel obstruction, chylous ascites and peritoneal irritation signals. About of 10% of the patients are asymptomatic. The radiological study, especially computed tomography (CT) and magnetic resonance imaging (MRI), are essential components of the diagnostic evaluation. The “greasy” ring signal and the pseudocapsule tomographic findings are considered specific tumoral this pathology. The histopathologic study establishes the diagnosis. There is no specific treatment for SM and should this be empirical and individualized. Although there are described cases of spontaneous remission, some authors have shown benefit with the empirical treatment using corticosteroids, colchicine, immunosuppressants, antibiotics, tamoxifen, alone or in combination. The surgical approach has a limited role and usually aimed at symptomatic relief. In most cases, the prognosis is favorable.

KEYWORDS: sclerosing mesenteritis; mesenteric panniculitis; retractile mesenteritis; systemic nodular panniculitis; liposclerotic mesenteritis; mesentery

Introduction
The Mesenteric Panniculitis (MP) is a rare condition, characterized by chronic inflammation and nonspecific of adipose tissue in the intestinal mesentery [1]. Affects primarily the mesentery of the small intestine and the involvement of the colonic mesentery observed in about 20% of cases [2]. May involve, even, more rarely, the fat, retroperitoneal and pelvic peripancreatic [3]. It first described as mesenteritis retractable in 1924, and less than 300 cases reported around the world [1]. Presents various terminologies, such as mesenteritis, mesenteric panniculitis, nodular systemic panniculitis retractable, liposclerosis mesenteritis, mesenteric xanthogranulomatous, inflammatory pseudotumor and lipogranulomatosis [2,3].

Copyright © 2016 by the Bulgarian Association of Young Surgeons
DOI:10.5455/ijsm.mesenteric-panniculit
First Received: April 07, 2016
Accepted: June 06, 2016
Manuscript Associate Editor: George Baltchev (BG)
Editor-in-Chief: Ivan Inkov (BG)
Reviewers: Ram Ratan (IN)

1 Full Professor Of General Surgery At The Rio Grande Do Norte Federal University – Ph.D. In Health Science - NATAL /BRAZIL. Full Professor, Department Of Surgery, Potiguar University – LAUREATE INTERNATIONAL UNIVERSITIES – NATAL /BRAZIL
Email: irami.filho@uol.com.br
Is diagnosed mainly during the sixth and seventh decade of life and seems to be two to three times more common in males than in females. Also, several reports indicate that to MP is more common in Caucasian men. Pediatric cases are exceptional, probably because children have less mesenteric fat when compared with adults [1]. Prevalence rates reported vary from 0.16% to 7.80% [4].

The rarity of this condition restricts our study the demographic characteristics and clinical approach, as well as natural history and response to therapy disease [3-5]. Thus, the therapeutic decisions are guided by anecdotal experience/empirical and case reports published in world literature [3]. A more recent study described a prevalence of 0.6% in more than 7000 abdominal computed tomography examinations [5].

The mesenteric panniculitis has unknown etiology and can occur independently or in association with other disorders [4]. It knew that she represents the final stage of progression of chronic inflammatory diseases of the bowel mesentery, with a predominance of fibrotic component [6].

As a result, this clinical entity correlates with a number of pathologies, leading us to infer that it is a process nonspecific inflammatory, autoimmune, reactive to any aggression, generating local inflammatory reaction intra-abdominal, whose diagnosis based on the high clinical suspicion, histological and imaging studies, and these last two commonly required [2,5]. The possible autoimmune etiology supported by a significant clinical response to immunomodulatory drugs [2,5-7].

Corticosteroids, immunosuppressants, colchicine, tamoxifen, progesterone, and recently the thalidomide, have been used with varying success (3). Although the prognosis is favorable, about 20% of patients associated with significant morbidity and a chronic course [8]. The MP has a poorly understood association with underlying malignancy with contradictory results in the literature, which suggests it might be a paraneoplastic condition in at least some patients [4].

The purpose of this article is to deepen the understanding of the main features of MP, with a focus on the pathogenesis, clinical presentation, diagnosis, differential diagnosis, treatment, and prognosis, currently available on this entity.

Material and Methods

This work did by an electronic search in the databases PubMed (Medline), Scopus, Scielo and Web of Science. We collected data from case reports, cohort studies and literary reviews, using the descriptors: Sclerosing mesenteritis; mesenteric panniculitis; reticile mesenteritis; systemic nodular panniculitis; liposclerotic mesenteritis; mesentery. The method presented the following guiding question: “What are the primary results and scientific evidence identified in national and international bibliographical production of the last years, about diagnostic and therapeutic approach of Sclerosing mesenteritis?”.

In the initial survey, 90 articles were identified, which have gone through an evaluation of all researchers (authors), by the following inclusion criteria: articles published in Portuguese, English or Spanish, to submit the combinations of the keywords. After the initial selection of material were deleted the items repeated in different databases and they focus on the other pathologies, the mixed sclerosing mesenteritis edge. Although picked by articles that cover useful updates in the treatment, the therapeutic failure was not used as a criterion for deletion, considering the particularity of the manifestations of each case. The final material featured 47 scientific articles.

Pathogenesis

To mesenteric panniculitis is described as an idiopathic inflammatory process followed by fibrosis that mainly affects the mesentery of the small intestine. According to recent literature, the involvement of the colonic mesentery is rare, as well as the peripancreatic region, omentum, retroperitoneum and pelvis [9,10].

Although you do not have a defined cause, various mechanisms are being suggested based on case reports and animal studies. Among them, include abdominal trauma, previous surgery, autoimmune diseases, ischemic injury, and paraneoplastic syndromes, infections [2-5,6,9]. Emory reported a series in which 84% of patients had a history of trauma or any abdominal surgery [10,11]. Durst et al. stated that the recent surgery was related to 17% of its cases, constituting a predisposing factor [12]. Abdominal surgeries more commonly described, cholecystectomy, appendectomy, hysterectomy and colectomy [5,6].

Other factors, such as gallstones, coronary heart disease, cirrhosis, abdominal aortic aneurysms, peptic ulcer or ascites, have also been related to this disease [13,14]. Some authors consider that tobacco can also contribute to the onset of mesenteric panniculitis. As a result, the consumption of nicotine not only produces a sense of satisfaction that influences the neural reward system but also has a wide variety of independent effects, such as an increased inflammatory response in the digestive tract [13-15].

The mesenteric panniculitis has been described in association with some conditions, including autoimmune thyroiditis, presumably of Riedel, primary sclerosing cholangitis, retroperitoneal fibrosis, and orbital pseudotumor. Also, can be related to paintings of autoimmune hemolytic anemia, minimum damage nephropathy, pulmonary fibrosis, lupus erythematosus and relapsing polychondritis [2,5-7]. Studies describe an intrinsic connection between the increase of serum IgG4 antibodies and the intestinal inflammatory process, suggesting a relationship between SM and IgG4-related diseases [15].

About the paraneoplastic syndrome, the proportion of cases associated with underlying malignancy varied in studies. Several neoplasms reported, including lymphoma, breast cancer, melanoma, squamous carcinoma and pulmonary adenocarcinoma, renal carcinoma, multiple myeloma, chronic lymphocytic leukemia, mesothelioma thoracic, hepatocellular carcinoma, adenocarcinoma of the prostate, ovarian carcinoma, endometrial carcinoma, cervical carcinoma, angiosarcoma, gastrointestinal adenocarcinomas and carcinoid tumor [3,5,6].

The ischemic lesions are described correlated with the previous surgery, abdominal trauma, mesenteric thrombosis and mesenteric arteriopathy [3]. The association with infections proved to be more evident in patients with personal history of infection with typhoid, dysentery, tuberculosis, syphilis, malaria, influenza and rheumatic fever [3-5, 16]. Initially a degenerative process of mesenteric fat, followed by inflammation (panniculitis). Later, develops and fibrosis the retractive mesenteritis appears [9].

The inflammatory process-fibrotic can affect the gastrointestinal lumen and the blood vessels and mesenteric lymph nodes, causing injury for mass effect, which may result in partial bowel obstruction, ischemia and ascites quiloa, justifying the diverse clinical gastrointestinal and systemic [3,10].

Intraoperative findings might be the diffuse thickening of the mesentery, a single tumor, multiple tumors or also a various mix of the nodular and hypertrophic components [17]. Also,
the mesocolon may be involved, as well, rarely, mesoappendix, peripancreatic area, omentum and pelvis. Its gross appearance explains how easy it is to mimic many other intra-abdominal neoplastic diseases. Histology displays different bars of involvement [17-19]. As regards the main complications, one can infer that they are intrinsically related to progressive fibrosis, shortening of the mesentery, intestinal obstruction (most often of the small intestine) and ischemia by compression of blood vessels, which may require surgery. Ureteral obstruction associated with retroperitoneal involvement [18].

**Diagnosis**

The clinical presentation of mesenteric panniculitis is varied, and its diagnosis requires a high degree of suspicion because the disease is usually asymptomatic [5,19,20].

The major signs and symptoms appear to be associated with inflammation and the adjacent organ mass effect [3-5,18].

The duration of symptoms ranged from 24 hours to two years, with an average of 6 months, showing a continuous or intermittent character [5,18]. About of 10% of the patients are asymptomatic at diagnosis, have been diagnosed when subjected to radiological procedures for other indications, including fever of undetermined origin or non-specific abdominal complaints [5]. Other signs and symptoms may be present, and reflect conditions attached, such as an underlying malignancy. In these cases, the investigation the pleural effusion associated with mesothelioma, fever of unknown origin, protein-losing enteropathy, hemolytic anemia, jaundice by biliary obstruction and hardened subcutaneous nodules [5-7].

The laboratory tests are often normal, or discrete non-specific variations feature depending on the seriousness of the painting. There is anemia, neutrophilia, erythrocyte sedimentation rate (ESR) and levels of C-reactive protein (CRP), in addition to hypoalbuminemia. These changes occasionally reported. The ESR and CRP can even serve as indirect markers of therapeutic response [10,18]. The radiological study, particularly CT and MRI, are essential components of the diagnostic evaluation, though many of its features are nonspecific [5,6]. The images vary according to the extent and the effective part of the injury (inflammation, necrosis or fibrosis) [19,20].

The abdominal CT is the most sensitive imaging method to evaluate the presence of the disease. However, their specificity is limited in function of the extensive differential diagnosis of mass lesions of the mesentery [5,21]. The most common finding is a nonspecific mass of soft tissue in the mesentery of the small intestine, which infiltrates the intestinal tissue [7-10, 18]. If the image presents a homogeneous texture, we can think of a lesion with a layer of foamy macrophages replaces mesenteric fat. The mesentery of jejunum seems to be the most commonly involved, whereas in the sigmoid colon involvement is as described in the studies [5,9,18-21].

The most striking feature of the CT, mesenteric panniculitis is the increase in the density of mesenteric fat for attenuation values of -40 to -60 Hounsfield units (HU), compared with the standard attenuation of subcutaneous fat and retroperitoneum, which are, respectively, -100 to -160 HU [2,3].

The “greasy” ring signal (75-90% of cases) and the tumor pseudocapsule (50-60% of cases) are considered specific findings of this pathology. The sign of the greasy ring represents the soft tissue surrounding the perivascular fat without infiltrating the mesenteric vessels, while the pseudocapsule tumor refers to the presence of a hyperattenuating band that surrounds the mass lesion [3,5]. These findings are important not only for diagnosis but also to the exclusion of other tumors, like the lipomatosis, especially the liposarcoma lipogenic, carcinoid tumor and lymphoma [18,21].

Calcifications are present in about 20% of the tomographic findings and probably result from fat necrosis [19-22]. The retroperitoneal or mesenteric lymphadenomegaly is present in 20-40% of patients, and displays nodules smaller than 5 mm in diameter [5-8]. The role of the CT is not limited only to the diagnosis of this disease, but also to non-invasive monitoring of the progression of volume and mass, as well as an extension of the vascular involvement and identification of potential complications. Also, AIDS in exclusion of diseases requiring urgent surgical intervention [3,9].

The MRI has a major role in the diagnosis of SM since it allows for better characterization of tissue. In T1-weighted sequences, the lesion presents intermediate signal, while in the T-2, the standard signal may vary according to the predominant tissue, that is, if there are severe fibrosis, there will be hypointense signal while if there is a predominance of inflammatory process and residual fat, there will be hiperssinal [18].

The ultrasound appearance of MP is variable and nonspecific, showing both descriptions with different masses (predominantly hyperechoic) as hypechoic masses. The ultrasound with color Doppler can clearly show the mesenteric vessels within the masses [18-20].

Computed tomography positron emission tomography (PET) and angiography, have also been used to detect this condition, but the literature is still scarce [9]. The PET proposed as a promising tool for differentiation between benign and MP with lymphoma tumor involvement mesenteric [3]. Because of this, the diagnosis is established by histopathologic study, being the essential biopsy and mandatory on all suspected cases. So, although the percutaneous biopsy can be used to obtain the tissue, laparoscopy or laparotomy, are often required [5,22].

Histologically, the disease progresses in three stages. The first phase characterized by mesenteric lipodystrophy, in which a layer of foamy macrophages replaces mesenteric fat. Right now, the acute inflammatory signs are minimal or non-existent, and the disease tends to be clinically asymptomatic with a good prognosis [9,10].

Figure 1: Axial contrast enhanced CT image shows displacement of small bowel loops by the well-defined fatty mass in the mesentery. Notice that the mesenteric vessels are not displaced but rather engulfed in the mass.
Figure 2: Axial T1-weighted MR image showing the mass with intermediate-low signal intensity in the mesentery that displaces small bowel loops which have a spiculated and irregular outline (arrow). Flow void correspond to lumen of mesenteric vessels.

In the second step, called mesenteric panniculitis, histology reveals an undercover consisting of B cells, polymorphonuclear leukocytes, and macrophages sparkling [10]. The segments of the small intestine may show slight thickening and elongation. The most common symptoms include fever, abdominal pain, and malaise [23].

Already in the final stage, adopts the sclerosing term, that has a stage with deposition of collagen, fibrosis, inflammation, and, occasionally, calcifications. The deposition of collagen leads to scarring and shrinkage of the mesentery [9,10]. It leads to the formation of an abdominal mass, leading the obstructive symptoms [24].

Figure 3: Fibroadipose tissue with areas of adiponecrosis (double arrows), foci of mononuclear cell from infiltrate inflammatory (arrows) and proliferation of bundle-forming fibroblasts (large arrow) (Hematoxylin-eosin, × 100).

Some studies suggest diagnostic criteria based on radiological and histopathological findings:

- Injuries with a large density that configure single, multiple or diffuse masses;
- Histological confirmation of fat necrosis with inflammatory infiltrate and/or infiltration by macrophages;
- No evidence of inflammatory bowel disease, pancreatitis or extra-abdominal fat necrosis (suggestive of Weber-Christian disease). However, these criteria require more studies still to be properly established [5,18].

**Differential Diagnosis**

The differential diagnosis of mesenteric panniculitis is broad and includes all diseases that can affect the mesentery. Among them can be mentioned: Lymphoma, peritoneal carcinomatosis, carcinoid tumor, desmoid tumor, peritoneal mesothelioma, amyloidosis, chronic inflammation due to a foreign body, metastasized from desmoplastic carcinoma, sarcoma, retroperitoneal, mesenteric fibromatosis and mesenteric edema. Some conditions can cause mesenteric edema, including hypoalbuminemia, cirrhosis, congestive heart failure and traumas [5,9,25].

Other diagnoses should include as:

- Primary inflammatory diseases of the pancreas (acute pancreatitis) and intestine (inflammatory bowel disease);
- Systemic diseases with fat necrosis (Weber-Christian disease);
- Peritoneal inflammatory pseudotumor;
- Lymphomatoses;
- Idiopathic retroperitoneal fibrosis;
- Lipoma;
- Lipomasarcoma;
- Deposits;
- Tumor infiltration by adenocarcinoma of the gastrointestinal tract;
- Sclerosing peritonitis;
- Whipple’s disease;
- Mesenteric cysts and peritoneal mycobacterial diseases [5,6].

**Treatment**

There is no consensus on medical care for symptomatic cases of mesenteric panniculitis, and many clinicians develop a therapeutic approach based on the patient’s clinical scenario, with a constant focus on the aspects of the inflammatory disease process [26,27-31]. Some investigators report spontaneous resolution of illness, and others describe the curative resection and laparotomy clearly indicated in the case of sclerosing mesenteritis, associated bowel obstruction resolving [12,29-33]. In the absence of spontaneous resolution, several different therapeutic approaches have found some measure of success; although in the therapies are uniformly efficacious [34]. The clinical management depends on the histological findings and stage of the disease. In the early stages, when fat necrosis is the main feature, it tends to settle spontaneously without [26,35]. As the disease progresses and chronic inflammation with or without fibrosis predominates, various agents have been used alone or in combination. Treatment has been attempted with a variety of drugs including steroids, azathioprine, cyclophosphamide, colchicine, tamoxifen, or radiotherapy, with different degrees of success [36-38]. The patients with a greater inflammatory component, with fever, weight loss, and general malaise appear...
to be the most receptive to glucocorticoids, alone or in combination [39]. Some cases have been related reports strong role of colchicine therapy in the maintenance of remission of mesenteric panniculitis [10,38]. Mechanisms by which colchicine acts under pathological conditions are speculative and include:

- binding β-tubulin and β-tubulin-colchicine making pachycondyla, which inhibits the assembly of microtubules and the mitotic spindle formation;
- modulation of the production of chemokines and prostanoids;
- inhibition of neutrophils and endothelial cell adhesion molecules [40].

Pentoxifylline has been recently reported the promising antifibrotic agent successfully used in a case of sclerosing mesenteritis [3]. Tamoxifen is used correctly in 19 patients in the series of Akram et al. and 63% of these patients responded within 12 weeks of initiation of treatment [41]. In the same series in similar benefits were obtained with prednisone alone or in combination with non-tamoxifen treatment. The severe fibrosis bowel obstruction may occur appears. Bowel resections, bypasses or ostomy, might be required [40-42].

Performing surgical resection of the lesion is quite difficult due to the presence of associated vascular compromise and the extent of disease [42]. The surgical approach should be limited to biopsy of the mass [43]. Therefore, surgery should be attempted only in patients with severe complications, such as bowel obstruction or perforation and advanced inflammatory changes irreversible [42].

Thus, researchers related surgical resection must be individualized according to patient’s anatomic characteristics due to the possibility of complications arises, becoming the worst life quality. For example, if a long segment of the jejunum would have needed to be removed in the patient with small bowel mesentry of the jejunum which was shown to be widely involved in the CT scan and gross findings during laparotomy, such an operation could, with high probability, result in short bowel syndrome [44]. Although there is uncertainty about the optimal treatment, it is a situation with a favorable prognosis in most patients with good responses to treatment [6].

Prognosis

The natural history of mesenteric panniculitis is not well understood. It happens due to the rarity of this condition, as well as the confused nomenclature which disperses in epidemiological reports and the lack of proper monitoring [5].

The mesenteric panniculitis usually has a benign, self-limited course, slowly progressive evolution, and resolves spontaneously in most cases, showing a favorable prognosis. It mainly depends on a correct diagnosis and extent of fibrotic process. The rate of recurrence is rare. However, 20% of patients have significant morbidity and a chronic debilitating course [5,6,45].

Because of this, the more advanced stages seem to attend with a negative and less therapeutic response. A minority of patients have rapid and fatal evolution, and according to some authors, a reasonable percentage developed malignancies during the studies, including lymphoma, carcinoid syndrome, lung adenocarcinoma and mesothelioma [6,45,46].

In the series of Daskalogiannaki et al., the sclerosing mesenteritis was related to malignancy in 69% of the patients. The association with malignancy can be coincidental or secondary to the autoimmune inflammatory reaction. However, the exact mechanism has yet to be elucidated [46,47]. It knew that the prevalence of previous and/or concomitant malignancy was significantly higher in patients with mesenteric panniculitis than in the control group. It is particularly the case for the prevalence of prostatic carcinoma [4].

The duration between the initial diagnosis of mesenteric panniculitis and the diagnosis of malignancy, ranged from 2 months to 4 years and four months, with an average of 19 months. However, not found signs of malignancy lows CT exams, for patients who developed after the diagnosis of malignancy MP [3,4].

In another study involving ten patients, three showed a history of gastrointestinal tumors (pancreas, stomach, and colon), with a time span of 7, 10 and 36 months, respectively, after the diagnosis of mesenteric panniculitis, and underwent pancreateco-duodenectomy, total gastrectomy, and sigmoid, respectively [1]. Due to the scarcity of information and the importance of the association between mesenteric and sclerosing malignancies, it is essential that more study and research be carried out to elucidate such an association.

Conclusion

In summary, one can infer that mesenteritis is a rare, sclerosing and constitutes a challenge for many professionals, the example of the surgeon, radiologist, pathologist, and gastroenterologist. Also, it is essential that this pathology is always included in the differential diagnosis of patients with severe systemic manifestations and high acute inflammatory response markers of unknown etiology, especially when there are demonstrations in the topography of abdomen.

Authors’ Statements

The authors declare no conflict of interest.

Disclosure

All procedures performed in studies involving human participants were by the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

References


