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Sclerosing Mesenteritis and Disturbance of Glucose Metabolism: A New Relationship? A Case Series

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Case series
Patient: Male, 51 • Male, 70 • Male, 63 • Male, 67 • Female, 76
Final Diagnosis: Sclerosing mesenteritis
Symptoms: Abdominal pain
Medication: —
Clinical Procedure: Colchicine
Specialty: Metabolic Disorders and Diabetics

Objective: Rare co-existance of disease or pathology

Background: Sclerosing mesenteritis is an idiopathic inflammatory and fibrotic disease that affects the mesentery. It is a rare disease, with the total number of reported cases in the literature ranging from 122 to 300. It mainly affects men in the sixth decade of life, and its etiology remains unknown. Clinical presentation is variable, but it is frequently asymptomatic. Diagnosis is often made by computed tomography (CT) scan, although biopsy may be needed for confirmation. An association between other diseases (e.g., neoplasms) and sclerosing mesenteritis has been described, but the relationship between the latter and glucose changes is not disclosed in the currently available literature.

Case Report: Five cases of sclerosing mesenteritis and glucose metabolism disorders (impaired fasting glucose and type 2 diabetes mellitus) were retrospectively collected and analyzed. The mean age was 65±9.3 years, 80% were male, and all patients were white. Three patients were asymptomatic and the other 2 (40%) had non-specific chronic abdominal pain. Blood tests revealed normal inflammatory parameters (mean HbA1c was 6.4% and fasting blood glucose was 140 mg/dL). The diagnosis was made by abdominal CT scan. The 2 symptomatic patients underwent therapy with colchicine 1 mg/day, with clinical improvement. During the mean 43-month follow-up period, there was no symptomatic progression, thereby maintaining the usual benign course of this condition.

Conclusions: Sclerosing mesenteritis has only been described in small series and isolated cases, but its diagnosis is becoming more common due to greater access to diagnostic methods and higher awareness of the disease in the medical community. Furthermore, despite the small sample size, we describe a possible association between glucose metabolism impairment and sclerosing mesenteritis.

MeSH Keywords: Diabetes Mellitus, Type 2 • Glucose Metabolism Disorders • Panniculitis, Peritoneal

Full-text PDF: http://www.amjcaserep.com/abstract/index/idArt/896145

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Background

Sclerosing mesenteritis (SM) is usually considered a benign fibroinflammatory process that involves the mesenteric adipose tissue, and is characterized by the presence of fat necrosis and chronic inflammation with or without fibrosis [1]. It is considered a rare condition and current knowledge is mainly based on case reports and small series of patients. There is a discrepancy in the total number of published cases, ranging from 122 to 300 [2–5].

SM mainly affects men in their sixth decade of life, and has a variable clinical presentation, although it is often asymptomatic [6]. The diagnosis is usually performed by computed tomography (CT) scan, although tissue biopsy may be needed for confirmation [7,8].

The etiology is still unknown, and several associations with other entities have been described, including previous abdominal surgery, infection, trauma, ischemia, autoimmune diseases, and neoplasms [5,8]. However, the association with high blood glucose levels has not yet been described.

Case Report

Case 1

An asymptomatic 51-year-old male patient was diagnosed with non-alcoholic steatohepatitis and type 2 diabetes mellitus (DM2) 2 years previously and was on medication with metformin 500 mg. Physical examination was positive for hepatomegaly. Laboratory data revealed an impaired fasting glucose of 131 mg/dL, HbA1c of 5%, and a GGT 2.7x the upper normal limit (UNL). Abdominal ultrasound showed hepatomegaly and steatosis, with focal spared areas. To clarify this finding, an abdominal CT scan incidentally detected SM. No specific treatment was started for this condition because the patient remained asymptomatic.

Case 2

A 70-year-old male patient was hospitalized due to recent worsening of abdominal pain that had been occurring during the previous 3 years. He described a generalized and "dull" pain of variable intensity, without aggravating or relieving factors.

Past medical history included DM2 (diagnosed 10 years ago), arterial hypertension, dyslipidemia, and psoriasis. He had been treated with metformin + sitagliptin 1000/50 mg, simvastatin 20 mg, and olmesartan + amlodipine 20/5 mg. Physical examination was relevant for a body mass index (BMI) of 26 kg/m^2 and the presence of diffuse abdominal pain on palpation. Blood test results were remarkable for an HbA1c of 7.7% and creatinine 1.4×UNL. A CT scan was performed and revealed SM. Treatment with colchicine 1 mg id was started, with a good response during the following 8 months.

Case 3

A 63-year-old male patient had been followed for 12 years for fosinopril-induced cholestatic liver disease. He was asymptomatic, with unremarkable physical examination results. Past medical history included DM2 (8 years), arterial hypertension, and cholecystectomy. He was treated with glibenclamide 5 mg, nifedipine 60 mg, and ursodeoxycholic acid 400 mg. Physical examination showed a BMI of 28.2 kg/m^2. Laboratory testing revealed an HbA1c of 6.2%, GGT 3.8×UNL, ALT 1.4×UNL, and alkaline phosphatase (ALP) 2×UNL.

A CT scan conducted as part of the evaluation of his liver disease incidentally detected SM. The patient remained asymptomatic without treatment.

Case 4

A 67-year-old male patient was hospitalized with sepsis and a recent exacerbation of chronic abdominal pain (lasting at least 3 years). Past medical history included DM2 (15 years), arterial hypertension, dyslipidemia, atrial fibrillation, sleep apnea, stroke, and cholecystectomy. He was treated with metformin + vildagliptin 850/50 mg, enalapril 20 mg, atorvastatin 10 mg, rivaroxaban 20 mg, amlodipine 5 mg, fluvoxamine 50 mg, and gliclazide 30 mg. Results of a physical examination were remarkable for diffuse abdominal pain, arrhythmic heart sounds, and a BMI of 30.8 kg/m^2. Blood tests showed increased inflammatory markers (as a result of infection) and HbA1c of 6.7%. Abdominal ultrasound was unremarkable, and a CT scan showed SM. No other causes for the patient's abdominal complaints were detected, and colchicine 1 mg id was started, with progressive clinical improvement in the following 3 months.

Case 5

An asymptomatic 76-year-old female patient was referred for evaluation due to a chronic liver disease of unknown etiology. She had normal results on physical examination and a relevant history of DM2 (>6 years), hypothyroidism, arterial hypertension, and chronic kidney disease. She was treated with levothyroxine sodium, perindopril, and aminophylline. Laboratory tests revealed mildly elevated liver enzymes and HbA1c was 6.5%. Abdominal ultrasound showed biliary sludge with unspecific changes in the gallbladder that required further evaluation. An abdominal CT scan was performed and SM was incidentally found. No treatment was started, as she remained asymptomatic during follow-up.

Table 1. Demographics and patient characteristics.

	Case 1	Case 2	Case 3	Case 4	Case 5
Age	51	70	63	67	76
Gender	Male	Male	Male	Male	Female
Race	Caucasian	Caucasian	Caucasian	Caucasian	Caucasian
Chief complaint	ø	Abdominal pain	ø	Abdominal pain	ø
Time between diagnosis of DM and SM	2 years	10 years	8 years	15 years	6 years
Associated comorbidities	NASH*	Hypertension Dyslipidemia Psoriasis	Hypertension Cholecystectomy	Hypertension Dyslipidemia Atrial fibrillation Sleep apnea Stroke Cholecystectomy	Hypothyroidism Hypertension Chronic kidney disease
HbA1c	5%	7.7%	6.2%	6.7%	6.5%
Specific treatment	ø	Colchicine	ø	Colchicine	ø
Treatment response	–	Pain improvement at 8 months	–	Pain improvement at 3 months	–

* NASH – non-alcoholic steatohepatitis.

Characteristics and associated disorders of these patients are shown in Table 1.

Discussion

Sclerosing mesenteritis is a rare, usually benign, idiopathic, chronic, non-specific inflammation of the abdominal mesentery [6,9]. It was first described in 1924 under the name of "retractile mesenteritis" [8]; since then, many other designations have appeared in the literature, such as mesenteric lipodystrophy, primary liposclerosis, isolated lipodystrophy, mesenteric panniculitis, and Weber-Christian disease [8].

In 1997, Emory et al. proposed use of the term "sclerosing mesenteritis" to group the 3 major histologic patterns: mesenteric lipodystrophy, mesenteric panniculitis, and retractile mesenteritis [10].

SM is diagnosed primarily during the sixth decade of life, and it is twice as common in men as in women [11]. It is asymptomatic in most cases, however, Akram et al. found that has an aggressive course in 20% of patients [11].

The most frequent symptom is abdominal pain (34.6–70%), which can be accompanied by other non-specific symptoms, including fever, nausea, vomiting, anorexia, and unintentional weight loss [1,11].

Diagnosis is made, in most cases, with CT imaging alone, but surgical abdominal exploration and biopsy of the mesentery may be required for confirmation in selected cases [12].

Treatment is reserved for symptomatic cases but since the first description of the disease in 1924, there has been no consensus on the appropriate medical therapy. A variety of anti-inflammatory, immunomodulatory, and anti-fibrotic agents are used to treat the disease, such as colchicine, prednisolone, azathioprine, thalidomide, and tamoxifen [11].

The lack of consensus regarding treatment may be due to the lack of knowledge about the pathophysiology of SM and the absence of randomized controlled trials regarding this condition, the latter as a result of the low number of reported cases.

In the available literature, a direct correlation of SM with DM or impaired glucose tolerance has not been described. Canyigit et al. and van Putte-Katier et al. estimated the prevalence of DM in SM at 21.6% (11/51 patients) and 8.7% (8/92 patients), respectively [13,14], although the statistical association between the 2 conditions has not been assessed. Daumas et al. and Amor et al. reported 2 cases of patients with SM and a history of DM/impaired glucose tolerance [1,12].

SM and DM2 share some features, which may theoretically link these 2 diseases.

Inflammation in DM2 has been recognized to play a role in the development of insulin resistance and its late complications. Several studies showed a probable relationship between pro-inflammatory cytokines (C-reactive protein, IL-6, IL-1, and TNF-alpha), changes in leukocytes populations (adipose tissue macrophages and CD8+ T and Th1 cells), and increased apoptosis and tissue fibrosis (markers of chronic inflammation) in the development of insulin resistance syndrome [15]. The epicenter of this inflammatory activity lies in the abdominal visceral fat tissue, where overnutrition causes hypertrophy and necrosis of adipocytes, leading to macrophage recruitment and activation, thereby linking obesity to insulin resistance [16–18].

This is further reinforced by the growing evidence of a relationship between adipocytes and the immune system, mediated by pro-inflammatory cytokines, such as leptin [16].

In inflammatory states, either acute or chronic, leptin levels rise, stimulating various levels of innate and adaptive immune responses. In the adipose tissue, leptin can contribute to macrophage accumulation because it stimulates migration of monocytes/macrophages by increasing diapedesis and monocyte chemotactic protein-1 secretion and also by promoting endothelial cell proliferation/neovascularization [16].

Thus, one can hypothesize that changes in the mesentery adipose tissue in inflammatory states (SM) may be similar to those described for DM. Histologically, one of the hallmarks of SM is the presence of fat tissue necrosis with foamy macrophages infiltration, alone (lipodystrophy) or associated with other immune cells, such as polymorphonuclear leukocytes and lymphocytes (mesenteric panniculitis) [9]. This is similar to that described in the fat tissue of obese subjects with insulin resistance, in whom macrophages are increased, and chronic inflammation and adipocytes necrosis are also present [15].

An important observation is that SM is linked to various other pro-inflammatory conditions, especially neoplasms [14], meaning that SM can be a consequence of or part of the systemic inflammatory response to a certain condition.

As a possible explanation for the 3 stages of SM, one may hypothesize that if the regulatory mechanisms of adipose tissue fail to contain the ongoing macrophage-adipocyte activation, there is a chance that symptomatic SM can occur. This continuous immune-mediated damage to the mesentery can then lead to the fibrotic form of the disease. It is also worth mentioning that the treatment of SM is immunosuppressant/immunomodulatory drugs, which can also corroborate this hypothesis.

Conclusions

In this series, all patients had changes in glucose metabolism. Despite the small sample size and the presence of other confounders (e.g., similar age of incidence for SM and DM), our results suggest a relationship between these 2 entities.

The association SM-DM is reinforced by findings regarding the pathophysiology of DM that focus on the role of fatty tissue inflammatory processes as one of the major contributors to the insulin resistance phenomenon. Further studies with larger samples are warranted.

Statement

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References:

1. Daumas A, Agostini S, Villeret J et al: Spontaneous resolution of severe, symptomatic mesocolic panniculitis: a case report. BMC Gastroenterol, 2012; 12: 59
2. Vlachos K, Archontovasilis F, Falidas E et al: Sclerosing mesenteritis: Diverse clinical presentations and dissimilar treatment options. A case series and review of the literature. Int Arch Med, 2011; 4: 17
3. Zafar AM, Rauf MA, Chawla T, Khanda G: Mesenteric panniculitis with pedal edema in a 33-year-old Pakistani man: a case report and literature review. J Med Case Rep, 2008; 2: 365
4. Rees JR, Burgess P: Benign mesenteric lipodystrophy presenting as low abdominal pain: a case report. J Med Case Rep, 2010; 4: 119
5. Gu GL, Wang SL, Wei XM et al: Sclerosing mesenteritis as a rare cause of abdominal pain and intraabdominal mass: a cases report and review of the literature. Cases J, 2008; 1: 242
6. Chawla S, Yalamarthi S, Shaikh IA et al: An unusual presentation of sclerosing mesenteritis as pneumoperitoneum: Case report with a review of the literature. World J Gastroenterol, 2009; 15: 117–20
7. Talwar A, Rayner H: The medical mystery of the fatty mesentery. BMJ Case Rep, 2012; 2012 pii: bcr1220115443
8. Issa I, Baydoun H. Mesenteric panniculitis: Various presentations and treatment regimens. World J Gastroenterol, 2009; 15: 3827–30
9. Sivrioglu AK, Saglam M, Deveer M, Sonmez G: Another reason for abdominal pain: mesenteric panniculitis. BMJ Case Reports, 2013; 2013 pii: bcr2013009305
10. Emory TS, Monihan JM, Carr NJ et al: Sclerosing mesenteritis, mesenteric panniculitis and mesenteric lipodystrophy: a single entity? Am J Surg Pathol, 1997; 21: 392–98
11. Akram S, Pardi DS, Schaffner JA, Smyrk TC: Sclerosing mesenteritis: clinical features, treatment, and outcome in ninety-two patients. Clin Gastroenterol Hepatol, 2007; 5: 589–96
12. Amor F, Farsad M, Polato R et al: Mesenteric panniculitis presenting with acute non-occlusive colonic ischemia. Int Arch Med, 2011; 4: 22
13. Canyigit M, Koksal A, Akgoz A et al: Multidetector-row computed tomography findings of sclerosing mesenteritis with associated diseases and its prevalence. Jpn J Radiol, 2011; 29: 495–502
14. van Putte-Katier N, van Bommel EF, Elgersma OE, Hendriksz TR: Mesenteric panniculitis: prevalence, clinicoradiological presentation and 5-year follow-up. Br J Radiol, 2014; 87(1044): 20140451

15. Donath MY, Shoelson SE: Type 2 diabetes as an inflammatory disease. Nat Rev Immunol, 2011; 11: 98–107
16. Li J, Li F, Zhao A: Inflammation and leptin. Drug Discovery Today: Disease Mechanisms, 2006; 3: 387–93
17. Guilherme A, Virbasius JV, Puri V, Czech MP: Adipocyte dysfunctions linking obesity to insulin resistance and type 2 diabetes. Nat Rev Mol Cell Biol, 2008; 9: 367–77
18. Chawla A, Nguyen KD, Goh YPS: Macrophage-mediated inflammation in metabolic disease. Nat Rev Immunol, 2011; 11: 738–49