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Sclerosing Mesenteritis in a Patient Heterozygous for Factor V Leiden

Authors' Contribution:

Study Design A
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Patient: Male, 33-year-old
Final Diagnosis: Sclerosing mesenteritis
Symptoms: Abdominal pain • diaphoresis • nausea • tachycardia
Medication: —
Clinical Procedure: Exploratory laparotomy
Specialty: Surgery

Objective: Rare co-existence of disease or pathology

Background: Sclerosing mesenteritis is an inflammatory and fibrotic disease that affects the mesentery of the small intestine. This condition is non-neoplastic, although it is frequently associated with underlying malignancies. The overall etiology is unclear because of the limited number of cases available for review, yet a number of possible mechanisms have been described, including ischemia. Factor V (FV) Leiden is a hereditary condition causing hypercoagulability, thrombosis, and ischemia. Because ischemia is one of the proposed mechanisms for the fibrosis and sclerotic findings of sclerosing mesenteritis, this case explores a possible association between FV Leiden and sclerosing mesenteritis.

Case Report: Herein, we describe a case of sclerosing mesenteritis in a patient heterozygous for FV Leiden, with a strong personal and family history of venous thromboembolism. This patient presented with acute worsening of chronic abdominal pain and was found to have a small bowel obstruction requiring acute surgical intervention. Imaging findings and pathologic examination of the ileum and mesentery conclusively diagnosed sclerosing mesenteritis.

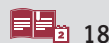
Conclusions: This case serves to highlight a possible association between mesenteric ischemia secondary to chronic thrombotic activity and sclerosing mesenteritis. This patient's virgin abdomen and lack of additional risk factors for sclerosing mesenteritis make this case a unique presentation of the disorder. This case serves to update the literature at large, as only one prior case in a FV Leiden patient has been described, in which the patient had the additional risk factor of previous abdominal surgery.

MeSH Keywords: Factor V • Intestinal Obstruction • Laparotomy • Panniculitis, Peritoneal • ThrombophiliaFull-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/926332>

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Background

Sclerosing mesenteritis is a non-neoplastic, inflammatory, and fibrotic disease affecting the mesentery of the small intestine [1]. It is an umbrella term used for a spectrum of inflammatory and fibrotic processes, including mesenteric lipodystrophy, mesenteric fibrosis, and mesenteric panniculitis [2]. Any of these forms of sclerosing mesenteritis can potentially have a mass effect that impedes the integrity of the gastrointestinal lumen and mesenteric vessels. However, only one case report, from 2010, discussed chronic thrombotic activity in the mesentery as a risk factor for the development of sclerosing mesenteritis, as was seen in the present case [3].

Sclerosing mesenteritis leads to the classic associated symptoms of abdominal pain, malaise, weight loss, and potentially a palpable abdominal mass. While these symptoms are associated with the condition, they are notably nonspecific and generate a broad differential diagnosis of other gastrointestinal pathologies. In more severe cases of sclerosing mesenteritis, complications can include bowel obstruction, obstructive uropathy, chylous ascites, or chronic mesenteric ischemia [4].

While previously believed to be a rare condition, recent publications have emphasized that this diagnosis may be more common than originally documented [1,2,5]. Overall, 60% of patients with sclerosing mesenteritis are white, with men aged 50 to 70 years being the most prominent demographic [2,6]. Although the etiology of the condition remains unclear, numerous mechanisms of pathogenesis have been suggested because the condition occurs in association with prior abdominal surgeries and trauma, autoimmune conditions, ischemia, and infection [6].

Herein, we present a case of a patient heterozygous for FV Leiden with small bowel obstruction secondary to sclerosing mesenteritis. As the etiology of sclerosing mesenteritis appears to be broad and multifactorial based on literature review, we present this case of sclerosing mesenteritis in a hypercoagulable patient to support chronic thrombotic activity as a viable pathogenic mechanism. This case also serves to update the literature at large, as only one prior case in a patient heterozygous for FV Leiden has been described, which occurred in a 29-year-old woman in 2010 [3].

Case Report

A 33-year-old man with a past medical history of polysubstance abuse and a saddle pulmonary embolus presented to the emergency department with abdominal pain that he reported having for a year. The patient reported a deep, gnawing pain that normally came on after eating, was epigastric in origin, and

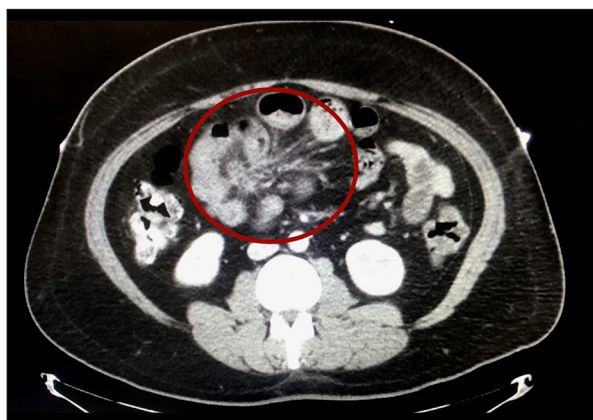


Figure 1. CT scan of abdomen with contrast showing a focus of mesenteric distortion (circled) and infiltration within the right mid abdomen resulting in partial small bowel obstruction with associated mesenteric lymphadenopathy.

did not radiate. Though the pain would normally last about 6 hours, this time the pain did not resolve on its own and got progressively worse, with associated nausea. On admission, the patient had not had a bowel movement in 3 days, and he reported a 60-pound weight loss in the past year. He had no history of past surgeries, his only medication at the time was methadone, and he had a 26-pack-year history of smoking. He was prescribed Eliquis for his history of pulmonary embolism; however, he had not been taking the medication for a number of months. Of note, his family history included a maternal uncle with pulmonary embolism and maternal grandmother with a deep vein thrombosis.

On physical examination, the patient appeared ill and unstable. He had tachycardia and was pale, hypertensive to 165/96 mmHg, and diaphoretic with a diffusely tender abdomen and a fullness in the epigastrium and upper quadrants without any peritoneal signs. No intra-abdominal mass was clinically discernable. However, given the patient's obese body habitus, the presence of possible obstruction was high on the differential diagnosis.

His white blood cell count was elevated at 11 680/uL with a neutrophilic shift of 74%, and he had an elevated lactate of 2.6 mmol/L. All other laboratory results were normal. Prior to surgery, the patient was sent for a computed tomography (CT) scan of his abdomen and pelvis which revealed a focus of mesenteric distortion and infiltration within the right mid abdomen, resulting in a partial small bowel obstruction (Figures 1, 2).

The patient was subsequently taken to the operating room the night of admission because of his pallor, diaphoresis, tachycardia, elevated lactate, neutrophilic leukocytosis, and the above CT findings. In addition to these objective measures, the patient



Figure 2. CT scan of abdomen with contrast, sagittal view, emphasizing the focus of mesenteric distortion (circled) and small bowel dilation with associated mesenteric lymphadenopathy.

appeared acutely ill and clinically unstable at the time of surgical consult, further warranting an exploratory laparotomy. This decision was reinforced by the severity of the potential etiologies behind his small bowel obstruction, which included acute infarct, tumor, and sclerosing mesenteritis. After adequate resuscitation, the patient was brought from the emergency department to the operating room.

An exploratory laparotomy was performed, which revealed a large mass with indurated mesentery and areas of necrosis. At 40 cm along the distal ileum, the bowel was folded upon itself like an accordion with foreshortened and thickened mesentery. This bowel mesentery complex was adherent to the retroperitoneum. The root of the mesentery could not be delineated to its proper origin, given the degree of chronic inflammation. The abdominal cavity and liver were explored and found to be free of tumor deposits. Sixty centimeters of small bowel was resected, along with the ileocecal junction and part of the proximal ascending colon. Ultimately, the distal ileum was anastomosed to the right colon in an iso-peristaltic side-side functional stapled anastomosis. The resected specimen of bowel and mesentery was sent to pathology, and

the patient recovered in the surgical intensive care unit before being downgraded on postoperative day (POD) 2 to the surgical floor. Intraoperative examination of the pathologic specimen revealed transmural thickening of the small bowel compromising the lumen and resulting in the patient's small bowel obstruction.

The patient's postoperative course was complicated by 2 episodes of fever. Fever workup, including chest X-ray, urinalysis, blood cultures, and CT scan of the abdomen and pelvis, was negative for infection, sepsis, or anastomotic leak. The patient was able to be discharged on POD 7 with instructions for follow-up. Prior to discharge, the patient was having regular bowel movements, tolerating a full diet, and was clinically improved.

At the follow-up office appointment 1 week after discharge, the pathology report (Figure 3) had shown torsion of the ileum with early ischemic changes, mesenteric panniculitis, and 3 lymph nodes with no pathologic change. Additionally, a genetic screening panel for inherited disorders of hypercoagulability revealed the patient was heterozygous for FV Leiden, a clotting disorder that was suspected given his past medical and family histories. Tumor markers CA19-9, AFP, and CEA were negative, and the flow cytometry results to evaluate for lymphoma were normal. While Chromogranin A, a neuroendocrine tumor marker, was elevated at 152 ng/mL (normal value, <93 ng/mL), the patient was on 40 mg omeprazole during hospital admission, which is a known source of false positive results for this test [7]. Prior to discharge, he was placed on anticoagulation treatment with apixaban for prophylaxis against future thrombotic events. Medication adherence was discussed at length with the patient, as his lack of proper prophylactic anticoagulation in the setting of FV Leiden had contributed to his prior saddle pulmonary embolus. This also likely resulted in chronic thrombotic activity in the patient's mesentery, the proposed mechanism for his diagnosis of sclerosing mesenteritis.

Discussion

Sclerosing mesenteritis may be a more prevalent condition than was previously believed. A German report from 1985 described a 1.26% rate in an autopsy study of 712 patients [1], while the American literature lacks such specific epidemiologic data. However, 6 more recent radiologic studies conducted in Europe from 2011 to 2016 identified a prevalence of between 0.58% and 7.83%, depending on the criteria used for the radiographic diagnosis [2,5]. This suggests the prevalence of sclerosing mesenteritis may be higher than previously identified, making it even more relevant to the medical literature.

In a systematic review of sclerosing mesenteritis by Yale New Haven Hospital's Dr. Prabin Sharma in 2017, 192 cases from

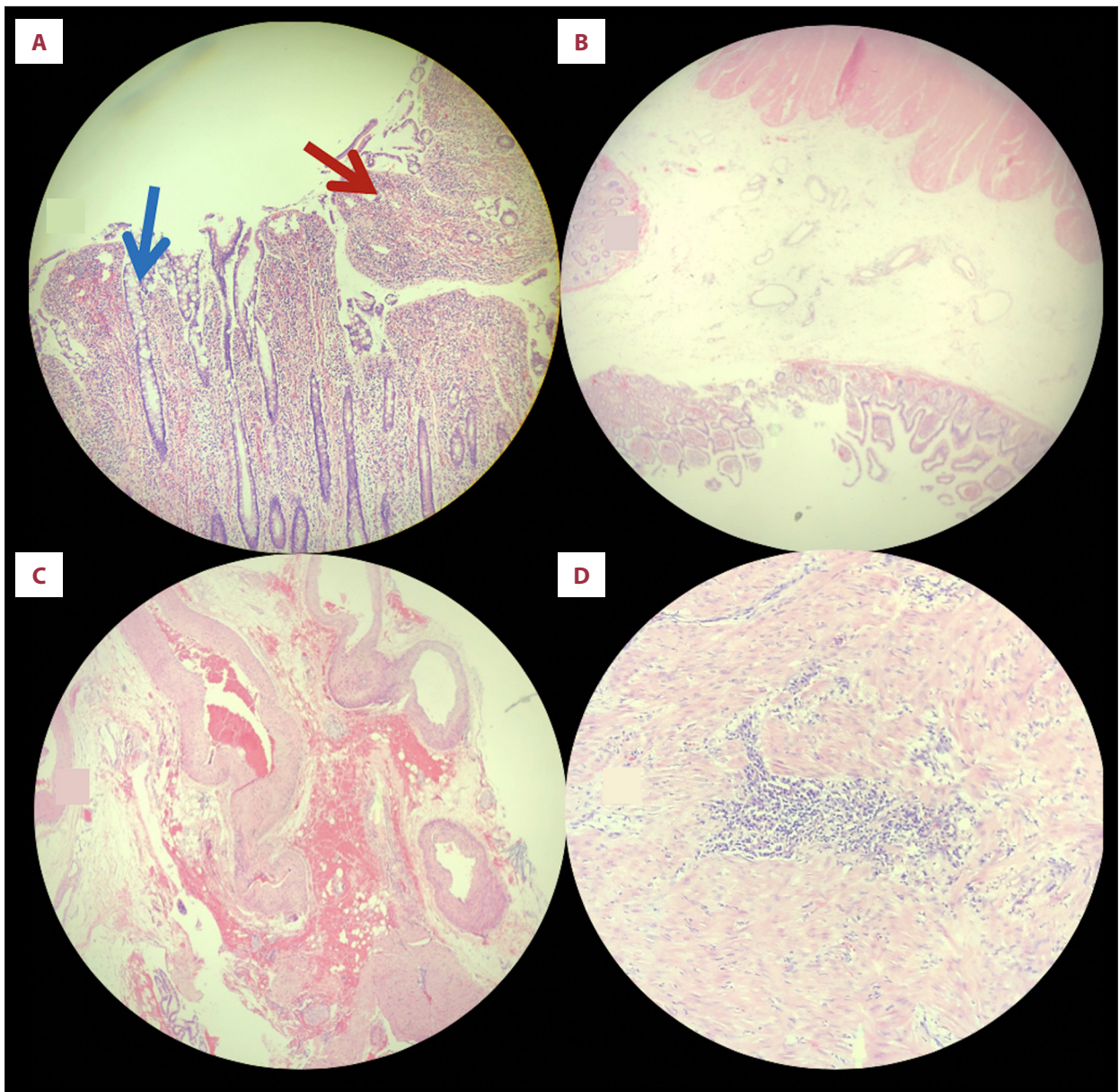


Figure 3. Early ischemic changes seen in the ileum specimen, including loss of glandular structures (A, red arrow), with normal tissue comparison (A, blue arrow), and submucosal edema (B). Mesenteric findings of thickened blood vessels and hemorrhage (C) as well as inflammatory infiltrates (D).

the literature were examined to gain a better understanding of sclerosing mesenteritis's epidemiology, risk factors, diagnostic methods, and other parameters [6]. Among these 192 cases and others presented in the literature, only one prior case of sclerosing mesenteritis in a patient heterozygous for FV Leiden has been described, in a 29-year-old female patient in 2010 [3]. In that case, the patient had a history of cholecystectomy within a year of presentation, which is described in the report as a possible contributing factor to her presentation. Thus, the present case in a male patient, the more common demographic for the disease, serves to update the literature

and reinforce that FV Leiden thrombosis is a viable pathogenic mechanism for sclerosing mesenteritis, specifically in a patient with a virgin abdomen.

Numerous mechanisms of pathogenesis have been suggested since the condition occurs in association with neoplasms, abdominal surgeries and trauma, autoimmune conditions, infection, and ischemia (as in the present case). In cases of sclerosing mesenteritis, 75% of patients are reported to have an underlying malignancy, with the most common and significant being non-Hodgkin lymphoma, although numerous other

malignancies have been described [8]. Because of the high rate of concurrent malignancies, one review even proposed that the disease could be a paraneoplastic syndrome [6]. Additionally, 30% to 38% of patients with sclerosing mesenteritis have had prior abdominal surgery or trauma, lending to the theory that these patients possess an abnormal repair response in their mesentery [2]. This mechanism is less relevant to our present patient as he had never undergone any prior abdominal surgery, thereby serving as an important example of a virgin abdomen. The theories of autoimmunity, ischemia, and infection are derived from the various associations of sclerosing mesenteritis with these processes. The condition has been described in patients with a variety of autoimmune conditions, with this etiology supported by the clinical response to immunomodulatory medications such as glucocorticoids [9]. When studying sclerosing mesenteritis in the laboratory, the disease process was able to be replicated by interfering with the mesenteric blood supply or by injecting bacterial toxins into the mesentery [10].

In the present case, ischemia is the most relevant proposed mechanism, when considering the underlying etiology of this patient's sclerosing mesenteritis. His FV Leiden heterozygosity and prior history of a pulmonary embolism indicate a chronic hypercoagulable state. In FV Leiden, coagulation factor V is insensitive to activated protein C, a natural anticoagulant, due to an autosomal dominant point mutation in the F5 gene [11]. In homozygous individuals, this resistance to activated protein C leads to a substantial increased risk for thrombosis. In heterozygous individuals, such as the patient in the present case, there is a 5- to 7-fold increase in venous thromboembolism risk compared to in the normal population [12]. Our patient had a strong family and personal history of hypercoagulability, and a strong history of smoking.

Although FV Leiden has been described with sclerosing mesenteritis in only one previous case, it has been associated with numerous other conditions. Because of the clotting risk associated with the disorder, patients have a higher risk of cerebral vein thrombosis, Budd-Chiari syndrome, myocardial infarction, stroke, and obstetric complications [13,14]. FV Leiden has been described in a number of cases of thrombophilia associated with malignancies and is considered an independent

risk factor for thrombosis in these patients [15,16]. Patients with FV Leiden have also been described in cases of mesenteric ischemia, which has a similar pathogenesis to the possible ischemic etiology of sclerosing mesenteritis. One such case described extensive bowel ischemia requiring resection in a homozygous patient [17], while another presents acute arterial mesenteric ischemia in a patient with heterozygous FV Leiden [18]. This emphasizes that the hypercoagulability of FV Leiden is associated with a variety of conditions, further supporting its association with sclerosing mesenteritis.

Given the present patient's known risk factors for a hypercoagulable state, it is possible that the mesentery of the small intestine was affected by chronic thrombotic activity, leading to the inflammatory and fibrotic findings seen in sclerosing mesenteritis. Eventually, the chronic fibrosis of his mesentery resulted in a small bowel obstruction, necessitating the extensive surgical resection performed in this case. Especially considering this patient's virgin abdomen, this case serves to update the literature as a comparison to the patient in the 2010 case, in which the patient had a prior abdominal surgery in addition to FV Leiden [3].

Conclusions

In this case, we reviewed the literature relevant to sclerosing mesenteritis and its possible association with FV Leiden. We described the case of a patient heterozygous for FV Leiden, with a virgin abdomen, who presented with bowel obstruction and ischemia secondary to sclerosing mesenteritis to highlight a connection between these 2 conditions. This case adds to the literature and supports an ischemic etiology in the pathogenesis of sclerosing mesenteritis.

Department and Institution where work was done

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Conflicts of interest

None.

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