



## A Rare Presentation of SMA Vasculitis with Chest and Upper Back Pain: Case Report

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### Abstract

Mesenteric ischemia is a phenomenon that occurs when arteries supplying the gastrointestinal tract either become narrowed or obstructed, thus reducing or halting downstream perfusion. This case study will explore a case of mesenteric ischemia caused by SMA vasculitis, a nonatherosclerotic abdominal arterial vasculopathy (NAV), in which a 57 y/o woman with history of hyperlipidemia and GERD presented to the ER with chest and upper back pain. Initial work up for MI and PE were inconclusive and the patient was discharged. Patient then returned the next day complaining of chest and additional abdominal pain radiating to her back. An abdominal CTA, venous ultrasound, and MRI revealed findings highly suggestive of ischemia caused by vasculitis of the superior mesenteric artery, for which the patient was treated with tapering prednisone. Evaluation for mesenteric ischemia in patients presenting with nonspecific trunk pain will allow physicians to provide more prompt and catered care. Additionally, with the ubiquity of COVID-19 and its role in downstream inflammatory processes, atypical causes of mesenteric ischemia may be an increasingly important differential to consider.

### Keywords

Superior Mesenteric Artery, Mesenteric Ischemia, COVID-19, SMA Vasculitis, Case Report

### Introduction

Mesenteric vasculitis is an uncommon condition and can be life-threatening, so we aim to highlight this unusual presentation and analyze how this case was successfully diagnosed. In this case report, we will discuss a noteworthy unusual presentation of mesenteric ischemia due to superior mesenteric artery (SMA) vasculitis, in the hopes of preventing delays in diagnosis and care of patients who may present this way in the future.

Mesenteric ischemia can be caused by nonatherosclerotic abdominal arterial vasculopathies (NAV), including arterial dissection, aneurysm, stenosis, or vasculitis [1]. The majority of symptoms in mesenteric vasculitis are due to intestinal ischemia. Patients often present with abdominal pain, tenderness, and rectal bleeding, with associated nausea, vomiting, and diarrhea [2]. If the intestinal ischemia has progressed to the point of infarction, the patient may have more acute symptoms such as

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sudden onset of pain that is more severe than physical examination findings would suggest, as well as lower gastrointestinal bleeding. If the ischemia has been chronic, this can cause abdominal angina and weight loss [3]. In cases where severe complications such as intestinal gangrene or perforation are present, there may be altered mental status and hemodynamic deterioration or instability [4].

In this case, the patient's initial presenting complaint was chest and upper back pain, which made the diagnosis of mesenteric ischemia caused by SMA vasculitis particularly challenging.

### Case Background, Evaluation, and Diagnosis

A 57-year-old woman with a history of hyperlipidemia and GERD presented to ED initially with upper back and chest pain for the past day. ECG showed normal sinus rhythm. CXR revealed a normal cardiac silhouette. Normal brain natriuretic peptide of 27 pg/mL without clinical signs of heart failure, including peripheral edema, JVD, and shortness of breath. Troponin levels were evaluated at 5 pg/mL which were negative to rule out possible myocardial infarction. Elevated d-dimer of 4,900 ng/mL alludes to clotting degradation or clot formation, but also can be associated with malignancy, older age, and a variety of other health factors. Given location and severity of pain, a chest CT angiogram was then ordered and revealed no PE. She was then discharged.

She returned the next day with chest and abdominal

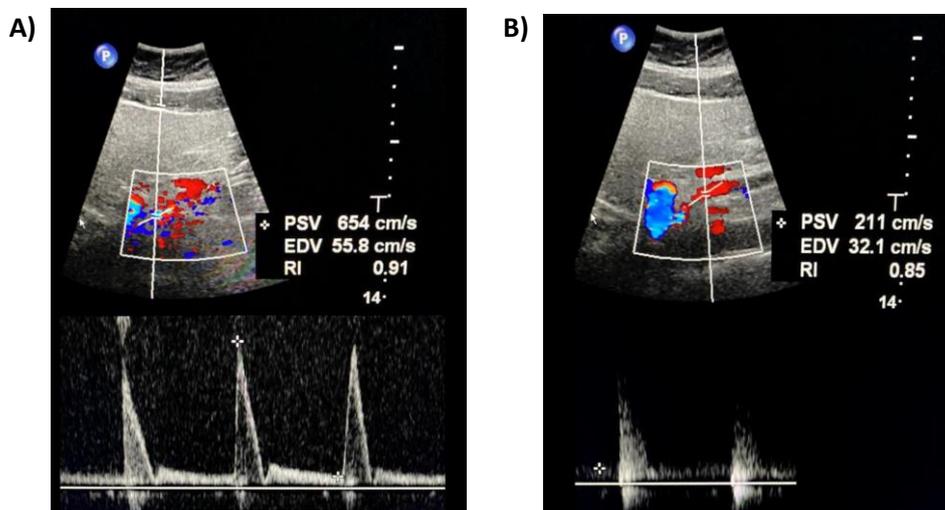
pain radiating to her back. Repeat ECG showed normal sinus rhythm and troponin was 3 pg/mL indicating a cardiac etiology was unlikely. Lipase test was unremarkable at 13 U/L. Abdominal/pelvic CT revealed haziness at the superior mesenteric artery (SMA) origin and an ill-defined soft tissue/wall thickening involving the origin of the SMA causing mild to moderate luminal narrowing. Patient was referred to vascular surgery and rheumatologic consultation (Fig-1).



**Fig-1: Abdominal CTA**

*There is ill-defined hazy soft tissue/wall thickening involving the origin of superior mesenteric artery, with moderate luminal narrowing*

At the vascular surgery clinic, venous ultrasound at the SMA origin revealed elevated peak velocity of 654 cm/sec and a 55.8 cm/sec end diastolic velocity; reference ranges for both these values are 275-300 cm/sec and 45 cm/sec respectively (Fig-2A, Fig-2B, Fig-2C and Fig-2D).



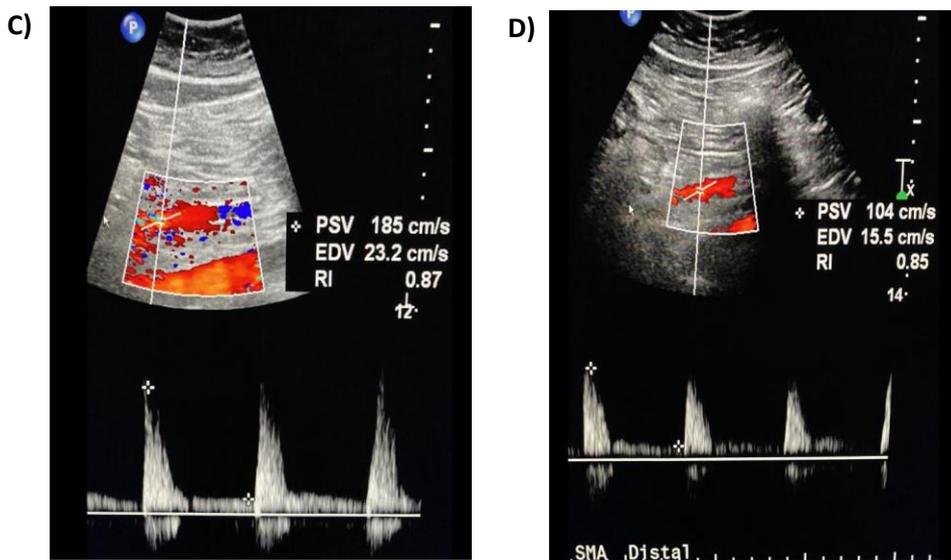


Fig-2A, Fig-2B, Fig-2C and Fig-2D: SMA ultrasounds

Superior mesenteric artery stenosis is suggested with Peak Systolic Velocity of 654 cm/sec and End Diastolic Velocity of 55.8 cm/sec at the SMA origin.

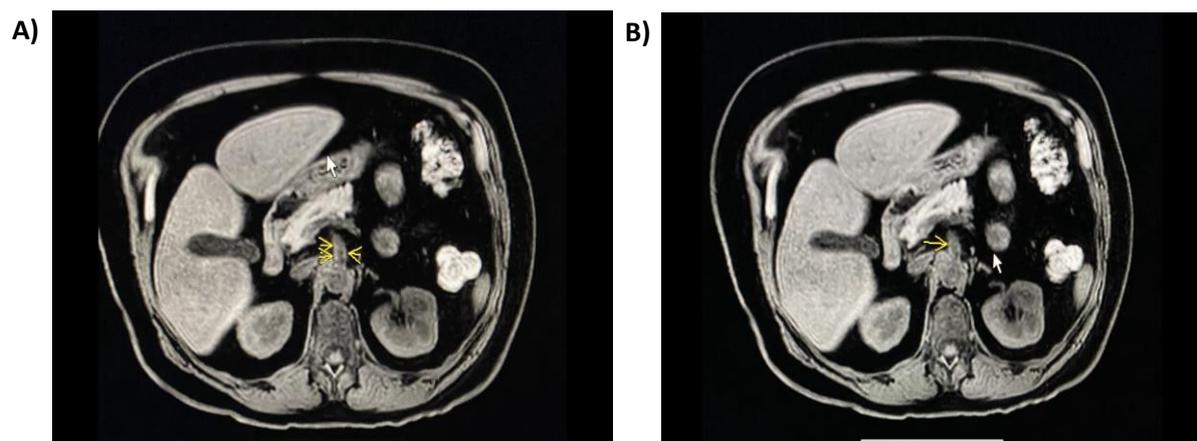


Fig-3A and Fig-3B: Abdominal MRIs

There is 50-75% luminal narrowing of the proximal portion of the superior mesenteric artery secondary to irregular wall thickening, discussed below and intraluminal filling defect, which may represent associated intraluminal thrombus/hematoma. There is mild, irregular wall thickening of the proximal superior mesenteric artery. The wall exhibits enhancement on post contrast images. Minimal stranding also noted in the surrounding fat. Findings are compatible with vasculitis [6]. No discrete surrounding mass is seen. Findings compatible with acute vasculitis involving the proximal portion of the superior mesenteric artery causing approximately 50-75% luminal occlusion.

Rheumatologist evaluation revealed detection of Antinuclear Antibody ANA/HEp-2/IgG. ANA titre 1:320 elevated and ANA pattern showed positive speckled pattern. C-reactive protein was mildly elevated at 1.8 mg/L, revealing minor inflammation. Additional autoimmune conditions were ruled out via negative SSA (1 AU/mL), negative scleroderma Ab IgG (2AU/mL). Phospholipid Ab IgM and IgG, DNA double stranded Ab IgG S, chromatin Ab Ig 12 negative were also all negative. Abdominal and pelvic MRI revealed

50-75% luminal narrowing of the proximal SMA with irregular wall thickening and intraluminal filling defect, alluding to acute vasculitis (Fig-3A and Fig-3B).

Follow-up: Repeat CRP levels decreased to 1.1 mg/L following regimen of a tapering dose of prednisone. Follow-up in 4-6 months to repeat abdominal and pelvic MRI imaging [5].

## Treatment

Treatment for this condition is mainly aimed at managing the inflammatory processes involved [4]. Steroids and immunosuppressants are the mainstay treatment for most patients with surgery being reserved for aneurysms or focal occlusions. Percutaneous transluminal angioplasty (PTA) or cutting-balloon angioplasty may be performed for long-term management of mesenteric vasculitis. In cases where an aneurysm has developed catheterization or coil embolization are the main treatments. Steroids cause vessel fragility, so the risk of perforation of a vessel during catheterization or embolization is higher in patients taking steroids chronically. Stents can be placed as a preventative measure for further occlusions, however most patients respond well to PTA so stents are not used in most cases. Most treatment is performed during the quiescent or chronic phase of the disorder [5].

## Conclusion

The significance of this case stems from the patient's chief complaint of upper back and chest pain, which is an unusual presentation of SMA vasculitis. The initial differential diagnoses in the emergency department were MI and PE. Labs specific to both these pathologies were noncontributory. The patient was discharged, but returned the next day with worsening pain radiating from the chest and back to the abdomen. Repeat labs for troponin and ECG were unremarkable however an abdominal and pelvic CT revealed haziness of the superior mesenteric artery indicating the underlying issue was of vascular origin. This finding led to vascular surgery and rheumatology consultations, and abdominal MRIs and SMA ultrasound resulted in a diagnosis of SMA vasculitis. While SMA vasculitis was not initially a primary differential consideration for a presentation of chest and back pain, earlier consideration of vasculitis as a possible cause in future similar cases would result in more timely diagnosis and management.

Recent research suggests that COVID-19 may impact inflammatory and microangiopathic processes throughout the body and could contribute to future cases of NAVs causing ischemia [7]. Some research

also suggests that SARS-Cov2 can directly invade the intestinal mucosa potentially causing other unforeseen inflammatory processes. As this virus continues to evolve, we are learning more about how it impacts the body and triggers inflammatory processes causing long term complications which may include NAVs. For patients presenting to the ED with similar complaints in the future, it would be important to consider SMA vasculitis as a possible etiology.

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## Conflict of Interest

The authors have read and approved the final version of the manuscript. The authors have no conflicts of interest to declare.

## References

- [1] Skeik N, Hyde JR, Olson SL, Thaler CM, Abuatiyeh W, Ahmed AK, Lyon DR, Witt DR, Garberich R, Sullivan T. Nonatherosclerotic Abdominal Vasculopathies. *Ann Vasc Surg.* 2019 Oct;60:128-46. [PMID: 31200053]
- [2] Salvarani C, Calamia KT, Crowson CS, Miller DV, Broadwell AW, Hunder GG, Matteson EL, Warrington KJ. Localized vasculitis of the gastrointestinal tract: a case series. *Rheumatology (Oxford).* 2010 Jul;49(7):1326-35. [PMID: 20360040]
- [3] Hohenwarter EJ. Chronic mesenteric ischemia: diagnosis and treatment. *Semin Intervent Radiol.* 2009 Dec;26(4):345-51. [PMID: 21326544]
- [4] Gnanapandithan K, Sharma A. Mesenteric Vasculitis. In: *StatPearls.* Treasure Island (FL): StatPearls Publishing; 2022 Jan [Updated 2021 Jul 2]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK546610/>
- [5] Angle JF, Nida BA, Matsumoto AH. Managing mesenteric vasculitis. *Tech Vasc Interv Radiol.* 2015 Mar;18(1):38-42. [PMID: 25814202]
- [6] Ha HK, Lee SH, Rha SE, Kim JH, Byun JY, Lim HK, Chung JW, Kim JG, Kim PN, Lee MG, Auh YH. Radiologic features of vasculitis involving the gastrointestinal tract. *Radiographics.* 2000 May-Jun;20(3):779-94. [PMID: 10835128]

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[7] Norsa L, Valle C, Morotti D, Bonaffini PA, Indriolo A, Sonzogni A. Intestinal ischemia in the COVID-19 era. Dig Liver Dis. 2020 Oct;52(10):1090-91. [PMID: [32532607](#)]

