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Case Report

Spontaneous isolated superior mesenteric artery dissection: A case report and brief analysis ☆

Aina Kratovska, MD[a], *Sanita Ponomarjova, MD*[a], *Natalija Vellere, MD*[b], *Arturs Ligers, MD, PhD*[c], *Reza Mohammadian, MD, PhD*[a,d,*]

[a] *Department of Interventional Radiology, Riga East University Hospital; Riga Stradins University, Department of Radiology, Latvia*

[b] *Department of Rheumatology, Riga East University Clinical Hospital, Riga, Latvia*

[c] *Department of Vascular Surgery and Interventional Radiology, Riga East University Hospital, Latvia*

[d] *Department of Radiology, Riga East University Hospital, Riga Stradins University, Hippocrates St, 2, Riga, LV-1038, Latvia*

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ABSTRACT

This case report describes the clinical presentation, diagnostic approach, and treatment strategies for a 58-year-old male patient diagnosed with spontaneous isolated superior mesenteric artery dissection (SISMAD). The patient presented with suddenonset abdominal pain and was diagnosed with SISMAD using computed tomography angiography (CTA). SISMAD is a rare but potentially serious condition that can lead to bowel ischemia and other complications. Management options include surgery, endovascular therapy and conservative management with anticoagulation and close observation.

The patient was managed conservatively with antiplatelet therapy and close follow-up. During hospitalization, he received antiplatelet therapy and was closely monitored for signs of bowel ischemia or other complications. The patients' symptoms gradually improved over time, and he was eventually discharged on oral mono- antiagreggation therapy. Clinical follow-up showed a significant symptimatic improvement. Conservative management with antiplatelet therapy was chosen due to the absence of bowel ischemia signs and overall stable clinical condition of patient.

This report emphasizes the importance of prompt recognition and management of SISMAD to prevent potentially life-threatening complications. Conservative management with antiplatelet therapy can be a safe and effective treatment option for SISMAD, especially in cases without evidence of bowel ischemia or other complications.

Abbreviations: SISMASD, Spontaneous idiopathic superior mesenteric artery dissection.

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* Corresponding author.
E-mail address: diako30@yahoo.com (R. Mohammadian).

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Introduction

Spontaneous idiopathic superior mesenteric artery dissection (SISMAD) is a rare but potentially life-threatening condition that can lead to reduced blood flow to the intestine, resulting in bowel ischemia, infarction, and potentially death if left untreated [1,2].

SISMAD was first described in the literature in 1946, and its incidence has been estimated to be less than 0.06% of all cases of acute abdominal pain [3,4]. The condition is more commonly seen in men than women, and in patients in their 5th-7th decade of life [5].

The exact cause of SISMAD is not well understood, but several risk factors have been identified. These include hypertension, atherosclerosis, connective tissue disorders, vasculitis, and trauma [1,6]. In many cases, however, SISMAD occurs spontaneously without any identifiable cause [7].

The clinical presentation of SISMAD is often acute abdominal pain, which can be severe and colicky in nature. Other symptoms may include nausea, vomiting, diarrhea, and fever [2]. Physical examination may reveal abdominal tenderness, distension, or guarding, and signs of peritonitis may be present in severe cases [8].

Imaging studies are essential for the diagnosis of SISMAD and computed tomography angiography (CTA) or magnetic resonance angiography (MRA) are the preferred modalities [2,9]. These non-invasive imaging techniques can demonstrate the characteristic findings of SISMAD, including the presence of a false lumen within the SMA, intramural hematoma, and/or thrombosis, pseudoaneurysm formation [10].

Management of SISMAD depends on the severity of symptoms, extent of arterial involvement, and the presence of associated complications. Conservative management with anticoagulation and antiagreggation therapy and close observation is often appropriate for patients with minimal symptoms and limited arterial involvement. Endovascular techniques, such as stent placement or embolization, can be used to manage larger or symptomatic dissections. In more severe cases, surgical intervention may be necessary [11].

This manuscript provides a comprehensive report on the patient who was diagnosed with SISMAD and was managed conservatively. The study presents the clinical and imaging findings at diagnosis, as well as the outcomes of conservative management and clinical follow-up results.

Case presentation

A 58-year-old male patient presented to the tertiary care hospital complaining of severe abdominal pain. The pain was sudden in onset and located in the periumbilical area. Patient reported nausea and few vomiting episodes a few times before admission. No signs of infectious gastroenteritis as fever or diarrhea were detected. The past medical history of the patient was significant for hypertension, dyslipidemia and a remote history of heavy smoking.

On examination, the patient was in moderate distress and had a heart rate of 110 beats per minute. His blood pressure was 160/90 mm Hg, and his oxygen saturation was 96% on room air. The abdominal examination on palpation revealed mild tenderness and guarding, with no signs of peritonitis. The rest of the physical exam was unremarkable.

Given the patient's symptoms and examination findings, a computed tomography angiogram (CTA) of the abdomen was performed. The CTA revealed a dissection of the superior mesenteric artery (SMA) without compromise of the true lumen. There were no noticeable atherosclerotic changes in the abdominal aorta itself and other visceral branches (Fig. 1).

The medical history and negative immunological investigation for vasculitis suggest that the dissection was less likely to be caused by a vasculitis. The PET/CT scan did not provide any evidence of mesenteric vasculitis. Thoracic CT scan and echocardiography were unremarkable.

Based on the PET/CT results, negative immunological tests and the patient's prompt response to non-steroidal

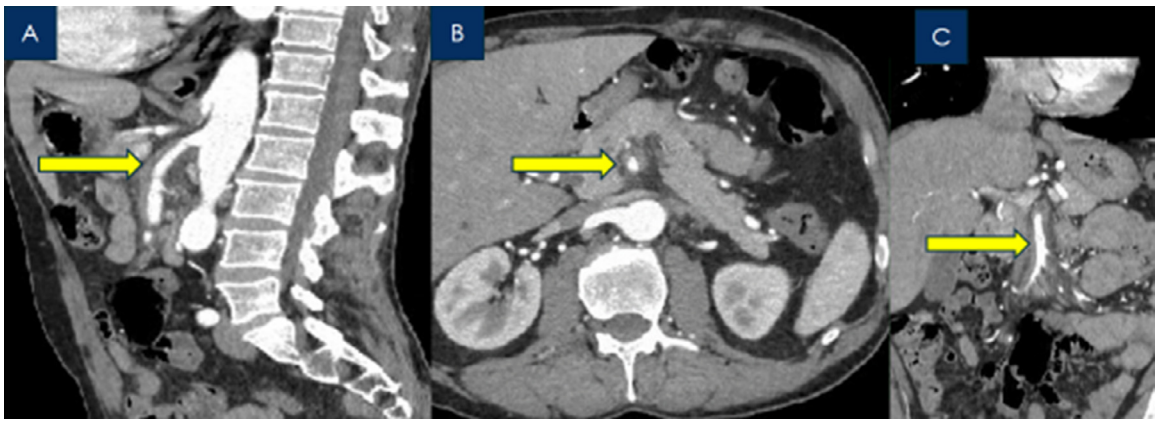

Fig – 1. Multiplanar CTA, sagittal (A), axial (B) and coronal (C) images showed typical features of isolated superior mesenteric artery dissection with resultant dilatation and thrombosis of false lumen (arrows). The main trunk of the superior mesenteric artery was dissected from its origin, but without hemodynamically signifficant stenotic compromise of true lumen (arrows).

anti-inflammatory drugs, we have determined that this particular dissection case is stable and the patient does not require anticoagulationtherapy at this time, despite the absence of contraindications. Nonetheless, we continued to monitor the patient's progress closely and were prepared to make adjustments to the treatment plan as needed to ensure the best possible outcome.

Upon evaluating the patient's condition, we promptly initiated treatment with dual antiplatelet therapy, specifically aspirin 100 mg once per day and Clopidogrel 75 mg once per day Shortly after admission opioids were administered for pain management and were administered for only 2 following days to alleviate the pain symptoms and improve overall comfort.

The patient was closely monitored for any signs of bleeding or thrombosis accompanying with close monitoring of blood pressure and heart rate.

Over the course of his hospitalization, the patient's abdominal pain improved, and he was eventually discharged on oral dual antiplatelet therapy one week after admission. He was advised to follow up regularly with his primary care physician and a vascular specialist and to perform abdominal control CTA in 1 month. The patient was advised to avoid any strenous activities that could increase the risk of bleeding, such as contact sports or heavy lifting. He was also counseled on the importance of regular follow-up appointments with his healthcare providers to monitor his condition and adjust medication as needed.

Discussion

The treatment of SISMAD is still a topic of debate, with some advocating for surgical intervention while others prefer conservative management. In this manuscript, we present a case of SISMAD that was managed conservatively.

In our case, the patient presented with acute onset abdominal pain and was diagnosed based on CTA findings. A comprehensive evaluation was conducted to exclude secondary causes, such as vasculitis. Upon diagnosis, he was initially managed with supportive care including pain management, intravenous fluids, and bowel rest. As per the current guidelines, conservative management of this disease involves anticoagulation therapy with either unfractionated heparin or low-molecular-weight heparin, followed by transition to a direct oral anticoagulant for long-term management [11,12].

Given the absence of active dissection characteristics and hemodynamically significant stenosis in presented patient, we decided to begin and maintain treatment with dual antiplatelet therapy. To manage the patient's symptoms, we administered appropriate analgesics such as acetaminophen or opioids. Throughout the treatment process, we closely monitored the patient for any potential complications, such as bowel ischemia or rupture, and remained prepared to make adjustments to the treatment plan based on the patient's clinical response and laboratory results. In addition to medical therapy, lifestyle modifications such as smoking cessation, weight loss, and blood pressure control may be recommended to decrease the risk of recurrent dissection or other cardiovascular events.

Conservative management of SISMAD has several potential advantages. It avoids the risks associated with surgical intervention, such as bleeding, infection, and the need for a prolonged hospital stay. Additionally, conservative management allows for close monitoring of the patient's condition and the ability to intervene surgically if there is evidence of bowel ischemia or rupture. However, conservative management also carries some risks. The potential for progression of the dissection or the development of bowel ischemia remains a concern, and close monitoring is essential to detect any signs of deterioration. There is also a lack of consensus on the optimal duration of bowel rest and the appropriate timing of resuming oral intake, which can result in prolonged hospital stays and increased healthcare costs [11–13].

Several studies have reported successful outcomes with conservative management, with resolution of the dissection and improvement of symptoms in a majority of patients. A systematic review and meta-analysis of 25 studies found that conservative management resulted in resolution of dissection in 79% of cases, with a low rate of such complications as bowel ischemia and rupture [13].

Furthermore, Kim et al. [14] reported in a retrospective study of 56 patients that conservative treatment led to favorable outcomes in 45 patients (80.3%). Similar results were observed in a study by Cho et al. [15] which reported resolution of dissection in 83% of patients with conservative management.

In the retrospective study, Kim et al. followed 33 patients with symptomatic SISMAD who were managed conservatively with anticoagulation therapy alone. They found that all patients showed complete or near-complete resolution of their dissection on follow-up imaging. Only 1 patient required surgery due to persistent symptoms, but the surgery was successful in relieving their symptoms [16].

In another retrospective study Park et al followed 22 patients with SISMAD who were managed conservatively with anticoagulation therapy alone. The authors found that all patients showed complete or near-complete resolution of dissection on follow-up imaging. Only 1 patient experienced a recurrence of SMA dissection, but it resolved with continued anticoagulation therapy. None of the patients experienced any major complications or required surgery [17].

Mizuno et al. analyzed data from 13 patients with SISMAD and evaluated their clinical characteristics, diagnostic methods, treatment, and outcomes. They found that most patients with conservative managements had favorable outcomes, with no major complications or deaths reported during the study period [18].

Another study by Sosogi et al. aimed to investigate the efficacy and safety of conservative management. Their results showed that the majority of patients had a favorable outcome, with complete resolution of symptoms within 2-6 months after discharge. There were no major complications or deaths during the follow-up period. The authors also concluded that conservative management is a safe and effective treatment option for these patients [19].

Overall, there are numerous other studies [20–24] which suggest that conservative management with anticoagulation and close observation can be effective for patients with SISMAD, particularly those who are stable and have no signs of bowel ischemia. However, it is important to note that each

case is unique and treatment should be individualized based on the patient's clinical presentation and imaging findings and surgical intervention may be necessary in some cases if conservative management is unsuccessful or if complications arise.

Although endovascular treatment has been proposed as an alternative for patients who fail conservative management, its effectiveness in treating SISMAD remains controversial [25–29]. A study by Huang et al. found no significant difference in outcomes between endovascular treatment and conservative management [30]. Nevertheless, there exist multiple reports indicating that endovascular repair can be a secure and efficient alternative for managing SISMAD, especially in instances where open surgery might pose a high risk or be technically complex [31–33].

Conclusion

Conservative management of SISMAD can be a viable treatment option, particularly in patients who are stable and have no evidence of bowel ischemia. However, close monitoring and careful selection of patients is essential to ensure optimal outcomes. Further research is needed to identify predictors of successful conservative management and to define the optimal duration of bowel rest and timing of resuming oral intake.

Patient consent

We obtained informed consent from the patient, to publish their case in the Journal of Radiology Case Reports. The patient provided a written consent statement, which is on file with the authors.

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