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Case Report

Radiology Section

Isolated Case of Superior Mesenteric Artery Dissection- A Case Report

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ABSTRACT

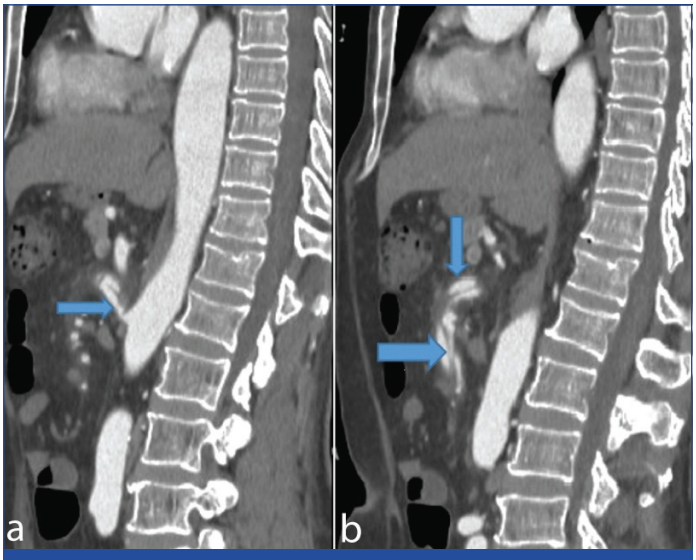
An isolated case of Superior Mesenteric Artery (SMA) dissection without bowel infarction or bowel ischaemic changes is a rare event. Due to advanced imaging studies, the incidence of isolated SMA dissection is increasing. A 55-year-old male patient with a history of abdominal pain and nausea for two days reported to Emergency services. After an initial examination, the patient underwent contrast Computed Tomography (CT) of the abdomen and was diagnosed as having an isolated dissection of the SMA. Both small and large bowel loops appear normal with no evidence of bowel ischaemic changes. The patient was put on anticoagulant medication, managed conservatively, and improved well. Superior mesenteric dissection is an uncommon condition, a diagnosis of exclusion that should be considered whenever there is a history of unexplained abdominal pain.

Keywords: Classification of Superior mesenteric artery dissection, Computed tomography abdominal angiogram, Dissection of abdominal aorta

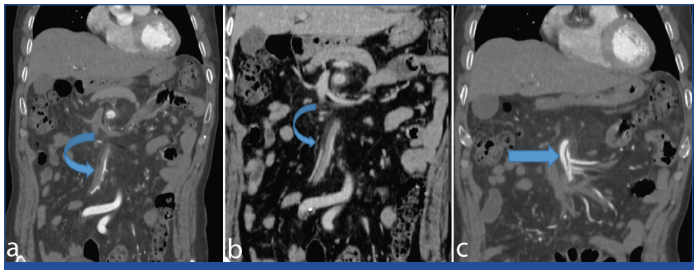
CASE REPORT

A 55-year-old male presented to the Emergency Department with persistent upper abdominal pain for the last two days. The abdominal pain is continuous in the epigastric region and both lumbar regions, not aggravated or relieved by food intake. A history of nausea and constipation was also present. There is no history of vomiting or fever, abdominal trauma, or previous surgeries. The patient is not a smoker or alcoholic and has been diagnosed with hypertension, receiving regular treatment for the last five years. There is no evidence of abdominal distension. The rest of the physical examination was unremarkable. All blood investigations, including complete blood count, renal function tests, and coagulation profile, were within normal limits. The patient was referred for a Computed Tomography (CT) abdomen. Plain CT abdomen study showed an enlarged SMA with significant fat strandings surrounding the artery.

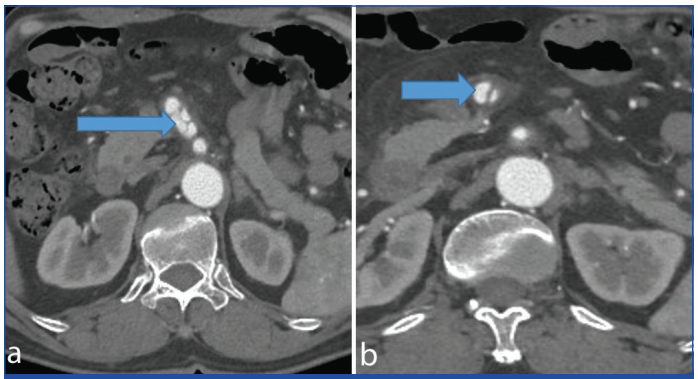
Contrast-enhanced Computed Tomography (CECT) of the abdomen showed an intimal flap within the SMA, originating from the origin of the SMA [Table/Fig-1a,b,2c], extending inferiorly for a length of approximately 5.9 cm. Evidence of thrombus within the false lumen of the SMA was noted for a length of about 4.5 cm [Table/Fig-2a,b,3a,b]. All branches of the SMA appeared normal with normal opacification. No dilatation of bowel loops, bowel wall thickening, or pneumatosis intestinalis was observed. There was no evidence of ascites, and pneumoperitoneum was absent. Bowel loops showed normal wall enhancement. The abdominal aorta, celiac trunk, both renal arteries, and the Inferior mesenteric artery showed normal opacification and appeared normal. The patient was managed conservatively with low-dose Heparin (250 units/kg), intravenous fluids, and bowel rest, and improved symptomatically. The patient was placed on oral anticoagulants and discharged after one week of admission, with instructions for a follow-up after two weeks.



[Table/Fig-1a,b]: (CECT Sagittal) show enlarged SMA with intraluminal septum (solid arrow) extending from the origin of SMA into the distal part of SMA.



[Table/Fig-2a-c]: (CECT Coronal section) show enlarged SMA with intraluminal septum (solid arrow) extending from the origin of SMA into the distal part with thrombosis of false lumen (Curved arrow) of distal SMA.



[Table/Fig-3a,b]: (CECT Axial section) show enlarged SMA with intraluminal septum (Solid arrow) extending from the origin of SMA into the distal part of SMA.

DISCUSSION

Spontaneous Isolated Superior Mesenteric Artery Dissection (ISMAD) is a rare type of arterial dissection and an uncommon cause of abdominal pain. This condition was first discussed by Bauersfeld in 1947. Among visceral arterial dissections, SMA dissection occurs more frequently. SMA dissection could occur as an isolated case or as an extension of dissection along with abdominal aortic dissection, with the latter being more common [1,2]. ISMAD is usually seen in middle-aged people (aged 50-70 years) with a male predilection [3,4].

The clinical presentation varies from asymptomatic incidental findings to acute bowel ischaemia/bowel infarction and occasionally fatal aneurysmal SMA rupture. Patients often present with acute or chronic abdominal pain that can be aggravated by meals, nausea, vomiting, and diarrhoea [3,5,6]. Diarrhoea occurs in cases of chronic bowel ischaemia presenting with malabsorption syndrome. Physical examination findings include tenderness over the epigastric or left upper quadrant regions. An audible epigastric bruit may be appreciated. However, the pathogenesis of ISMAD is unclear. Atherosclerosis, hypertension, cystic medial necrosis, fibromuscular dysplasia, vasculitis, and trauma are associated with this condition [1,7].

The CT angiogram is the gold standard diagnostic modality for SMA dissection because it demonstrates the extension of the intimal flap and false lumen, entry point, exit/re-entry point, presence of thrombosis, and features of bowel ischaemic changes like lack of bowel wall enhancement, bowel wall thickening, bowel dilatation, pneumatosis intestinalis, etc. [7]. An increased SMA diameter with surrounding fat strandings can be useful in the diagnosis in the case of Plain CT [8,9].

Kratovska A et al., reported a similar case in which a 58-year-old male patient, presenting with sudden onset abdominal pain, was diagnosed with CT abdominal angiogram as having spontaneous isolated SMA dissection. This patient was treated conservatively with antiplatelet therapy and closely followed-up for bowel ischaemic changes. The patient's symptoms improved gradually over time, and they were discharged with oral monotherapy anticoagulation. Conservative management with antiplatelet therapy was chosen for this patient due to the absence of bowel ischaemia and the overall stable clinical condition [10].

Zhang Y et al., also reported a similar case with a history of abdominal pain aggravated by food intake, later diagnosed as SMA dissection initially by USG and later confirmed by CT abdomen angiogram. The patient was treated conservatively with parenteral nutrition support, fluid supplementation, Metoprolol succinate sustained-release tablets, and aspirin. After a week of admission, the patient improved and was discharged. On telephonic follow-up, the patient had no recurrent symptoms [11].

Yun WS et al., planned a categorisation of isolated SMA dissection based on CT angiogram features. Based on these angiographic findings, three types of dissection were categorised [12]: Type I, presence of both patent true and false lumens with entry and re-entry sites; Type II, patent true lumen but no re-entry flow from the false lumen; Type IIa, visible false lumen but no visible re-entry site; Type IIb, thrombosed false lumen, which usually causes narrowing of the true lumen; Type III, SMA dissection with occlusion of the SMA.

Another classification, called the Luan classification [13], categorises the dissection into four types: Type A, localised dissection at the curved part of the SMA extending to the SMA ostium; Type B, the dissection limited to the curved part of the SMA; Type C, localised dissection at the curved part extending distally without involvement of the ileocolic artery or distal ileal artery; and Type D, localised dissection at the curved part extending distally into the ileocolic artery or distal ileal artery. This case report is categorised as Type IIb based on the Yun classification and Type C based on the Luan classification [13,14].

Some patients may develop complications such as bowel infarction, acute peritonitis, and late complications like pre-renal uraemia [14]. Severe complications can include rupture of the SMA aneurysm or dissecting artery into the peritoneal cavity, causing intra-abdominal haemorrhage, which can be fatal [15].

Currently, there are no clear guidelines available for the treatment of ISMAD patients. Generally, asymptomatic ISMAD patients or patients with dissection without aneurysm formation respond well to medical therapy, using anticoagulation such as low-dose heparin, which can help reduce the risk of thrombosis [5,10].

Patients with aneurysmal enlargement of the SMA and those at risk of developing bowel ischaemic changes are treated with endovascular stent placement [8]. The prognosis of this condition is variable, usually having a good prognosis, but it can sometimes be fatal in cases of ruptured dissection.

CONCLUSION(S)

Spontaneous isolated dissection of the SMA is an uncommon condition that should be considered in cases of unexplained abdominal pain. Recent imaging studies can detect isolated SMA dissection, and avoiding misdiagnosis and providing early treatment can prevent complications, improve prognosis, and enhance the survival of patients with this condition.

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