Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://Elsevier.com/locate/radcr

Case Report

Acute superior mesenteric artery occlusion complicated by basilar artery occlusion

P.S. Chatra DMRD, DNB, FRCR[*]

Radiologist, Department of Medical Imaging, Geraldton Regional Hospital, Shenton Street, Geraldton, WA 6530, Australia

ARTICLE INFO

Article history:
Received 3 February 2017
Received in revised form
21 March 2017
Accepted 18 April 2017
Available online 29 May 2017

Keywords:
Superior mesenteric artery
Basilar artery occlusion

ABSTRACT

Acute mesenteric ischemia is a rare cause of abdominal pain with a very high mortality rate. Vague presentation and often misleading clinical findings make the diagnosis elusive. Here, a unique case of complete superior mesenteric artery occlusion further complicated by basilar artery occlusion is illustrated.

Case report

A 57-year-old female patient presented to the emergency department with severe abdominal pain. On examination, there was mild distension of the abdomen with sluggish bowel movements. Detailed history revealed that the patient had atrial fibrillation and was on anticoagulants for 8 years. Her vitals were stable at the time of admission. Echocardiogram showed the presence of atrial fibrillation. On further questioning, the patient admitted to be on ritualistic fasting and having stopped all anticoagulant medication for 1 week. Emergency computed tomography (CT) evaluation was suggested in view of suspected bowel ischemia.

Contrast-enhanced CT examination showed the absence of blood flow in the proximal segment of superior mesenteric artery (SMA). This was further demonstrated on CT angiogram images (Fig. 1). There was an acute thrombus in the SMA (Fig. 2) with no flow in the distal branches of the vessel. The bowel loops were distended due to venous engorgement with no evidence of bowel necrosis (Figs. 3 and 4). The diagnosis of acute SMA occlusion secondary to atrial fibrillation was made, and thrombolysis was administered. The next day, patient's bowel symptoms persisted with decreased bowel movements as before. She also developed severe dizziness, and a CT brain study was advised which showed basilar artery thrombosis (Fig. 5) with brainstem infarction (Fig. 6). This was attributed to embolic shower from atrial fibrillation. Emergency surgery was deferred due to the presence of brainstem infarction. Intraarterial thrombolysis could not be offered as a treatment modality due to the absence of an interventional radiologist in

Work carried out in: Valiyath Institute of Medical Sciences, Market Road, Karunagappally 690518, Kerala, India.
Competing Interests: The authors have declared that no competing interests exist.

* *Corresponding author.*
E-mail address: khiladi001980@gmail.com.

http://dx.doi.org/10.1016/j.radcr.2017.04.003

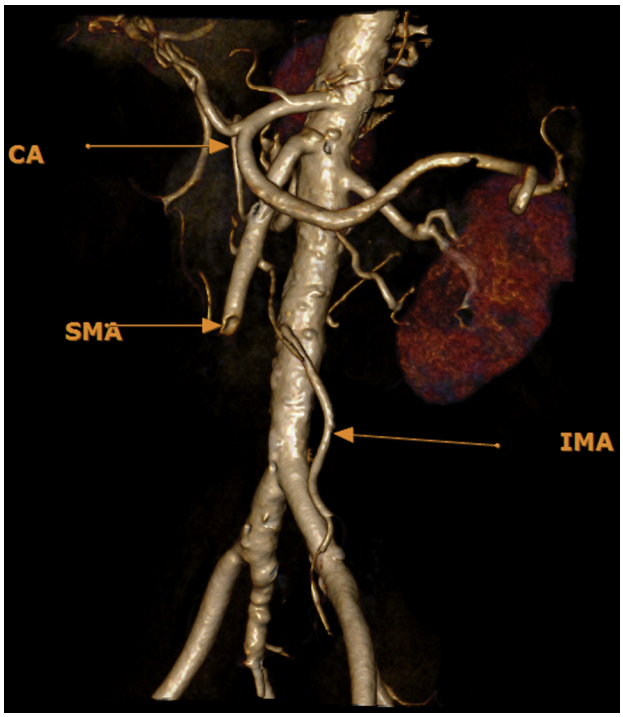

Fig. 1 – VR reconstructed image showing complete occlusion of SMA (arrow). SMA, superior mesenteric artery; VR, volume rendering; IMA, inferior mesenteric artery; CA, coeliac artery.

the hospital. Decision was made to continue with thrombolysis. Unfortunately, the treatment did not suffice, and the patient expired the following day.

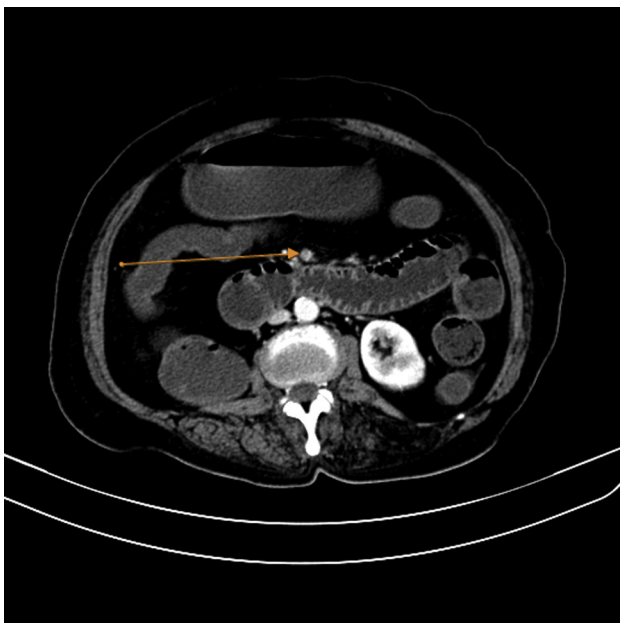

Fig. 2 – CT axial postcontrast images showing nonopacification of the SMA (arrow) with mild dilatation of the small bowel loops. CT, computed tomography; SMA, superior mesenteric artery.

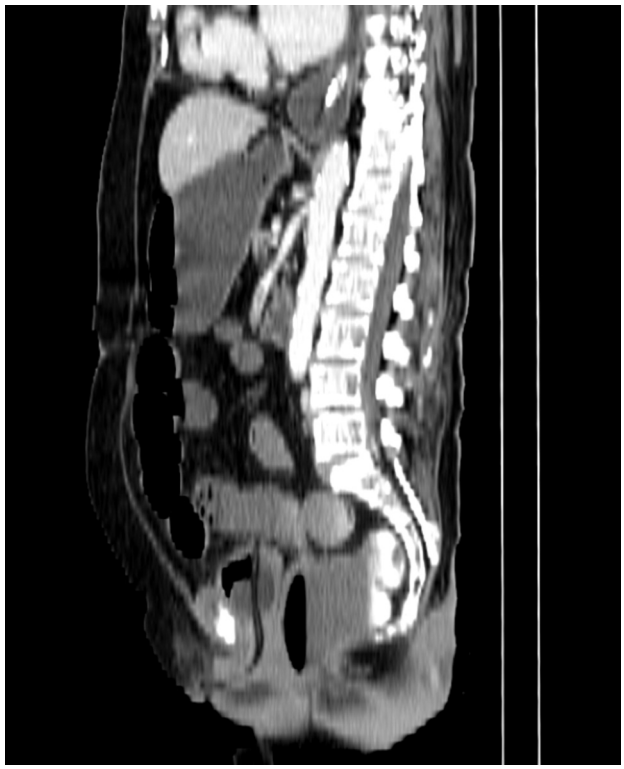

Fig. 3 – CT coronal reconstructed image showing thrombus in the SMA with contrast-filled SMV to the right of SMA. Mild dilated small bowel loops seen. CT, computed tomography; SMA, superior mesenteric artery.

Discussion

Acute mesenteric ischemia constitutes 1% of all patients with acute abdomen. Approximately 40%-50% of these cases are due to atrial fibrillation. Thromboembolism is the most important complication of atrial fibrillation [1]. Most common manifestation is stroke followed by limb ischemia. Mesenteric arteries and renal arteries are less frequent targets [2]. However, mortality is highest with mesenteric ischemia (59%-93%) followed by stroke (30%) and limb ischemia (16%). [1]

Basilar artery occlusion is a rare form of stroke which constitutes only 1% of all strokes but is associated with a very high mortality rates ranging from 80% to 95% in untreated cases [3]. Cardiac emboli constitute more than 60% of these cases. Incidences of these 2 lethal conditions in combination have not been reported extensively to arrive at a conclusion regarding their combined risks. However, there is one case report of segmental artery mediolysis leading to mesenteric ischemia and cerebral infarction [4]. In our study, the patient initially presented with mesenteric ischemia and developed basilar artery occlusion after 2 days. The basilar artery occlusion is most likely a complication of thromboembolic phenomenon.

Classical clinical presentation of SMA occlusion is a triad of abdominal pain, rectal bleeding, and shock. The abdominal pain is said to be disproportionate to the physical findings. Laboratory investigations provide little help in reaching a

Fig. 4 – CT sagittal reconstructed image showing thrombus in the SMA. CT, computed tomography; SMA, superior mesenteric artery.

clear diagnosis. CT angiogram is the investigation of choice [5].

Mortality in SMA occlusion is around 59%-93% [6]. Incidence of mortality varies with stages of treatment. Bowel

Fig. 5 – CT axial image of the brain showing high density in the basilar artery (arrow) suggestive of thrombosis. CT, computed tomography; BA, basilar artery.

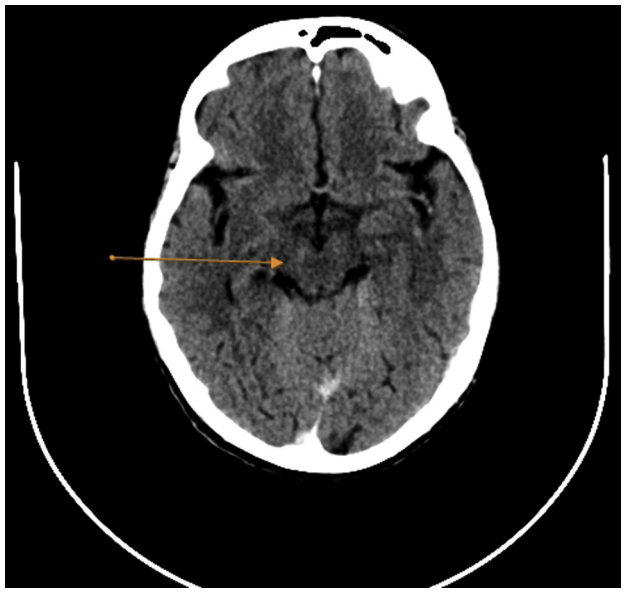

Fig. 6 – CT axial image of brain at the level of midbrain (arrow) showing hypodensity consistent with acute brainstem infarction. CT, computed tomography.

infarction is the most common cause of mortality followed by stroke and then by surgical complications [6]. Untreated SMA thrombosis is mostly lethal. Björnsson et al. [7] in their study of mesenteric thrombosis showed patients with partial lysis had a mortality of 25%, and those with no run off vessel involvement had good recovery. Long-term morbidity associated with surgery including short gut syndrome and total parenteral nutrition also reduces the survival rate, whereas shorter time to admission and revascularization has shown to reduce the mortality rate [7].

In our patient, the presence of atrial fibrillation coupled with discontinuing the anticoagulant medication increased the patient's risk for embolic shower. Factors that might have contributed to her death are inadvertent delay in diagnosis due to atypical presentation, late start of thrombolysis (>12 hours), and the presence of brainstem infarction contraindicating surgery. Other factors like nonavailability of interventional radiologist, possible poor prognosis, and poor long-term outcome might have contributed to the reluctance for an aggressive surgical management.

Since the patient presented with SMA thrombosis early and bowel infarction was not seen in initial CT examination, it was to be assumed that bowel was viable. However, since the thrombolysis was started as late as 12 hours after admission, it might not have been effective. This was further substantiated by the fact that the patient presented with new embolus in the basilar artery the day after the thrombolysis. In the study by Björnsson et al. [7], one of the patients died of stroke despite timely treatment. With the available evidence, it can be concluded that brainstem infarction was the probable cause of mortality in our patient. An additional possibility includes a combination of bowel infarction and brainstem infarction. Bowel infarction as a sole cause of death seems least likely.

Management of this condition relies on the golden time for thrombosis. The preferred treatment for less than 6 hours of ischemia is intraarterial thrombolysis with urokinase [8]. Some authors suggest thrombolysis should be followed up by repeat imaging, and if the thrombus is not resolving, surgery could be considered [9]. Chang and Stein [10] believe that restoration of circulation with resection of the nonviable bowel increases the survival rate.

Conclusion

SMA occlusion is an uncommon cause for abdominal pain, and one of the common visceral arteries affected by cardiogenic emboli with very high mortality rates. Basilar artery occlusion is a rare kind of stroke with a high mortality. Both of these arteries occluded by a shower of emboli coupled with other comorbidities proved too costly in this one unique case scenario.

REFERENCES

[1] Menke J, Lüthje L, Kastrup A, Larsen J. Thromboembolism in atrial fibrillation. Am J Cardiol 2010;105(4):502–10.
[2] Lyaker MR, Tulman DB, Dimitrova GT, Pin RH, Papadimos TJ. Arterial embolism. Int J Crit Illn Inj Sci 2013;3(1):77–87.
[3] Schoen JC, Boysen MM, Warren CR, Chakravarthy B. Shahram Lotfipour vertebrobasilar artery occlusion. West J Emerg Med 2011;12(2):233–9.
[4] Basso MC, Flores PC, de Azevedo Marques A, de Souza GL, D'Elboux Guimarães Brescia M, Campos CR, et al. Bilateral extensive cerebral infarction and mesenteric ischemia associated with segmental arterial mediolysis in two young women. Pathol Int 2005;55(10):632–8.
[5] Antuleska-Belčeska G, Jovanoska S, Ljušič G. Case report: partial occlusion of superior mesenteric artery with segmental bowel infarction. Acta Medica Medianae 2014;53(1):53–6.
[6] Türkbey B, Akpınar E, Çil B, Karçaaltıncaba M, Akhan O. Utility of multidetector CT in an emergency setting in acute mesenteric ischemia. Diagn Interv Radiol 2009;15:256–61.
[7] Björnsson S, Björck M, Block T, Resch T, Acosta S. Thrombolysis for acute occlusion of the superior mesenteric artery. J Vasc Surg 2011;54(6):1734–42.
[8] Muneoka K, Shirai Y, Takagi K, Koyama T. Intraarterial infusion of urokinase for acute superior mesenteric artery occlusion: a report of two cases (in Japanese with English abstract). Jpn J Gastroenterol Surg 2001;34:495–9.
[9] Oderich GS, Gloviczki P, Bower TC. Open surgical treatment for chronic mesenteric ischemia in the endovascular era: when it is necessary and what is the preferred technique? Semin Vasc Surg 2010;23(1):36–46.
[10] Chang JB, Stein TA. Mesenteric ischemia: acute and chronic. Ann Vasc Surg 2003;17:323–8.