



Intestinal Ischemia Mirrors Cardiac Angina- A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Author SD designed the study, collected data and wrote the protocol and wrote the first draft of the manuscript. Author KM has done critical revision and final approval of article. Authors PK and MB have done literature search for the study. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Chronic mesenteric ischemia (intestinal angina) is a condition that is caused by stenosis or occlusion of the mesenteric arteries (Superior mesenteric artery, inferior mesenteric artery and celiac artery) and usually manifest as abdominal pain which is usually post - prandial in nature. If plaque or lesion in an artery supplying the intestines narrows the vessel so severely that sluggish blood flow causes a clot, blood flow through that artery can become completely blocked, which can lead to ischemia .While surgical revascularization has been the standard treatment for symptomatic patients in past , recent advances in interventional devices and techniques have made endovascular treatment easily available and effective treatment. Endovascular treatment is considered as minimally invasive means of obtaining good long-term results. The Coronary arteries are common hiding places for cholesterol-filled plaque and blood clots. Plaque can limit blood flow during exercise or stress, causing the chest pain or pressure known as angina. Clots may completely block blood flow, causing a heart attack or cardiac arrest. These two leading perpetrators can do similar things elsewhere in the body. When they interfere with blood flow to the digestive system, the effects can range from a stomach ache after every meal to a life

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threatening emergency. We report a similar case who present with unstable angina. During hospitalization he was having persistent abdominal pain and who was investigated with CT abdomen and later Angioplasty was done which further showed significant benefit to patient.

Keywords: *Mesenteric ischemia; percutaneous transluminal angioplasty; superior mesenteric artery; surgical revascularization.*

ABBREVIATION

CMI : Chronic intestinal Ischemia
TMT : Tread Mill Test
CT : Computerized Tomography
SMA : Superior mesenteric artery
IMA : Inferior mesenteric arteries
PTCA: Percutaneous transluminal coronary angioplasty

1. INTRODUCTION

CMI (Chronic mesenteric ischemia) is caused by atherosclerosis in more than 90% of the cases. The disease usually presents in older population of age more than 60 years and the incidence is three times more common in women. Most patients of CMI generally have multiple cardiovascular risk factors and atheroma lesions in several territories such as the coronary arteries, carotids and/or lower limb arteries.

Multislice computed tomography can be used for pretreatment evaluation of celiac trunk and superior mesenteric artery (SMA) stenosis, if the patient's renal function is adequate. This confirms the presence of arterial disease and also allows for optimal planning in terms of approach, determination of vessel dimension, and point of reconstitution in cases of total arterial occlusion. In order to understand the pathophysiology of CMI, it is necessary to understand the anatomy of splanchnic circulation. Three major aortic branches provide the gastrointestinal blood supply: celiac artery (CA), superior mesenteric artery (SMA), and inferior mesenteric arteries (IMA).

There are basic two approaches for the treatment of Chronic Mesenteric Ischemia (CMI): Surgery and endovascular recanalization. Endovascular recanalization includes percutaneous transluminal angioplasty (PTA) with or without stent placement of one or more mesenteric arteries involved. Sometimes treatment of symptomatic CMI is necessary to prevent acute mesenteric ischemia, which may cause bowel infarction and death. Asymptomatic disease does not constitute an indication for treatment, although prophylactic

treatment may be necessary in cases of planned abdominal surgery because of probable loss of collaterals during surgery. Since 1980 several studies have presented the results of angioplasty, and/or stenting in the treatment of CMI. The overall peri-procedural mortality rate of the endovascular approach is between 0 and 13% and the complication rate is between 0 and 25%. Also, the technical success rate of the endovascular approach is 90–100%.

2. CASE REPORT

We report a case of 52 year male, moderate built admitted to out intensive cardiac care unit with complaints of chest pain since 2 month. He was known case of Diabetes mellitus and Hypertension. He was also alcohol addict. Past history revealed intermittent complaint of abdominal pain since 1 year, which was progressive in nature and mainly postprandial. Pain was non-radiating and cramping which used to get aggravated after having food. On admission, examination showed Heart rate of 80/min, regular, BP- 160/80 mm of Hg. ECG showed no significant ST-T changes. Patient has recently done Tread Mill Test (TMT), which was positive. Coronary angiography was done suggestive of Triple vessel disease (LAD –proximal 70 percent lesion, LCX mid 80% lesion and RCA mid 70% lesion); subsequently PTCA was done for this Patient. .Patient was not willing for CABG Coronary artery bypass grafting),hence we initially decided to go for PTCA. Patient was having significant relief from chest pain, however abdominal pain was persistent for which we observed patient for next 15 days. We decided to go ahead with renal angiography for this patient, which was found to be normal. Surgery opinion was taken for same and empirical antibiotic were started for patient .After prolonged antibiotic therapy patient was not benefited, and then we decided to go for CT Aortogram. CT Aortogram revealed significant Superior Mesenteric Artery (SMA) stenosis (moderate to severe stenosis).

2.1 Technique used Mesenteric Intervention

Right femoral access taken through 7F sheath .Heparin bolus was given as per weight before starting the procedure. Guiding catheter passed through same and selective Superior mesenteric artery cannulation was done and angiographic picture documented (Figs. 1 and 3). Lateral Aortogram was performed to locate the SMA; however Angiographic picture was taken in Left and right anterior oblique view. After confirmation of the stenosis, the lesion is crossed with an appropriate guide wire. After Guide wire placement SMA Stent was deployed over it at proximal location of 7 x 18 mm at 10 atm for 10 ms (Fig 2). After proper stenting balloon dilation was done .Final check shoot as shown in Fig. 4 showed significant

outcomes. This technique of mesenteric intervention for chronic mesenteric ischemia is similar to renal artery intervention. There were no any complications like dissection /Flap. Also there was no residual lesion left.

2.2 Post-Procedural Care

After shifting patient for post-operative care, the patient received IV heparin every 6 hourly for 48 hours. As stenting was planned, 300 mg clopidogrel was given to the patient before the procedure. Post procedure there was no local site complications. The anti-platelet regimen with clopidogrel (75 mg PO twice daily was continued) and ecosprin was continued .Patient showed significant improvement in symptoms and comfortable and hence discharged subsequently.



Fig. 1. Selective angiography of SMA



Fig. 2. During stent deployment



Fig. 3. Angiographic view of SMA



Fig. 4. Check shoot post stenting in SMA

3. DISCUSSION

Although Chronic mesenteric ischemia (CMI) is rare entity. This gastrointestinal disorder should be suspected in case of undefined abdominal pain even if it is not classic for same. If feasible, endovascular treatment should be considered which we have done in this case. Now days there are many treatment options available for CMI, but Endovascular treatment can be feasible and easily available treatment modality in such cases. Our patient presented with both cardiac and intestinal angina at the same setting. Considering old age athermanous burden can be cause for such multisystem involvement. Also common cardiac risk factors like diabetes mellitus, addiction play important role in multisystem involvement. With the recent improvement of the endovascular equipment and technical skills, endovascular revascularization of mesenteric stenosis can be a minimally invasive alternative to surgery. Going to history part, percutaneous treatment of CMI was first reported in 1980 [1]. Since then, many published studies have confirmed the feasibility of this approach in patients with symptomatic CMI [2-5]. Technical success of this procedure is high, ranging from 80–100%. With improved techniques and equipment available, even higher success rate is noted in recent studies. Symptomatic improvement has been reported in up to 95% of treated patients. Five to 20% of patients experienced no symptomatic relief immediately after the procedure Literature, which suggest that symptoms were probably due to etiologies other than bowel ischemia. Hence, appropriate patient selection is important before going for intervention. Endovascular intervention is safer procedure in the short term, with 0% to 11% mortality and 0% to 18% morbidity [6]. This high rate is probably ascribable to improvements in techniques and equipment. Adverse event rates were similar to those reported with other endovascular procedures, ranging from 0% to 29% in the larger series, in which puncture site complications account for most of the events. Endovascular treatment has been advocated for high-risk patients and for patients with vague symptoms and a doubtful diagnosis. In everyday practice, endovascular treatment is being used increasingly as the first-line treatment of choice, with open surgery being reserved for patients who fail this treatment modality. Endovascular treatment for patients

with CMI found to have high success rate and satisfactory clinical outcomes. Symptomatic recurrence was not frequent in patient treated with endovascular method but found mainly within 12 months following the initial procedure [7].

4. CONCLUSION

We conclude that patient with atypical abdominal symptoms should be evaluated for chronic intestinal ischemia .In suspected patient CT Aortogram or CT Abdomen should be done. However patient not willing or not ready for surgical approach can be proceeded with endovascular approach. This will reduce ongoing ischemia and will provide immediate symptomatic relief for patient.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline patients consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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