



CASE REPORT OF MESENTERIC ISCHEMIA IN CASE OF SUPERIOR MESENTERIC ARTERY THROMBOSIS.

General Surgery

Dr. Brijesh D Parekh

M.S. General Surgery, PG Guide and Associate Professor, Dept. of General Surgery, Narendra Modi Medical College, Maninagar, Ahmedabad, Gujarat.

Dr. Gaurav M Mishra

1st year Resident Doctor, Dept. Of General Surgery, Narendra Modi Medical College, Maninagar, Ahmedabad

Dr Aashay N Patel

2nd year Resident Doctor, Dept .of General surgery , Narendra Modi medical College, Maninagar, Ahmedabad.

ABSTRACT

Introduction: Acute mesenteric ischemia/occlusion is a life-threatening vascular emergency that requires early diagnosis and intervention to restore mesenteric blood flow and to prevent loss of life. Despite progress in our understanding about the mesenteric ischemia, diagnostic modalities, and treatment options, the mesenteric ischemia remains a diagnostic challenge. This leads to delayed implementation of treatment and thus contributes to high mortality and morbidity. **Methods:** Here, we have presented a case report of Mesenteric Ischemia in case superior mesenteric artery thrombosis. It discusses the various aspects of superior mesenteric artery occlusion, the aetiology, the difficulty with diagnosis, and the best possible course of action. **Discussion:** The Superior Mesenteric Artery (SMA) supplies the whole of the small intestine except the superior part of the duodenum. It also supplies the caecum, ascending colon and most of the transverse colon. Acute mesenteric ischemia (AMI) is a syndrome caused by inadequate blood flow through the mesenteric vessels, resulting in ischemia and eventual gangrene of the bowel wall.

KEYWORDS

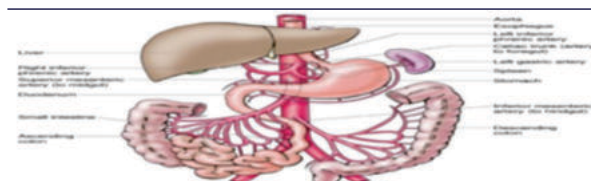


Figure 1: The anatomy of the superior mesenteric artery.



Figure 2: Acute mesenteric arterial Ischaemia.

INTRODUCTION

The Superior Mesenteric Artery (SMA) supplies the whole of the small intestine except the superior part of the duodenum. It also supplies the caecum, ascending colon and most of the transverse colon. It arises from the front of the abdominal aorta about one cm below the coeliac trunk, and it is crossed anteriorly at its origin by the splenic vein and body of pancreas. It passes downwards and forwards between the layers of mesentery until it reaches the right iliac fossa here it anastomoses with one of its branches, viz. the ileocolic artery. It is accompanied by the superior mesenteric vein which lies towards its right side and is surrounded by the superior mesenteric plexus of veins. The important branches of this artery are an inferior pancreaticoduodenal artery, jejunal and ileal branches, ileocolic artery, right, and middle colic arteries.

Acute mesenteric ischemia (AMI) is a syndrome caused by inadequate blood flow through the mesenteric vessels, resulting in ischemia and eventual gangrene of the bowel wall. Mesenteric vascular disease may be classified as acute intestinal ischemia- with or without occlusion. The superior mesenteric vessels are the visceral vessels most likely to be affected by the embolization or thrombosis. Occlusion at the origin of the SMA is almost invariably as a result of thrombosis, whereas the emboli lodge at the origin of the middle colic artery.

Possible sources of the embolization of the SMA include fibrillation of left atrium, a mural myocardial infarction, an athero-matous plaque from an aortic aneurysm and mitral valve vegetation associated with endocarditis. Primary thrombosis is associated with atherosclerosis and thromboangitis obliterans. Primary thrombosis of the superior mesenteric vein may occur in the association of factor V Leiden, portal hypertension, portal pyaemia, and sickle cell disease and in women

taking contraceptive pills. Thus, for practical purposes, AMI comprises four different primary clinical entities, Non-occlusive mesenteric ischemia (NOMI), and occlusive mesenteric artery ischemia (OMAI). This OMAI is further subdivided into acute mesenteric arterial embolism (AMRE) and acute mesenteric arterial thrombosis (AMRT). The AMI as the venous disease takes the form of Mesenteric venous thrombosis (MVT).

The overall prevalence of AMI is 0.1% of all hospital admissions. Venous thrombosis is found in approximately 0.001% of patients who undergo exploratory laparotomy. The risk factor for AMI includes arrhythmia, heart diseases, mitral stenosis, endocarditis, recent MI, and intra-abdominal malignancies. Approximately two-thirds of the patients are female.

Epidemiology

Acute mesenteric ischemia has incidence of about 12.9/100000 persons over the last 5 decades and is having the cause specific mortality of 6/1000 cases and in hospital mortality was around 93% which has decreased to about 58% more importantly due to progressive improvement in health sciences along with availability of the advanced technology for the specific investigations and the improvised skills and techniques for the surgical intervention and further management of patients.

Case Report

A 64 years, male patient presented to the Department of surgery Sheth LG hospital, Maninagar, Ahmedabad.

He gave the history of **severe periumbilical pain in the abdomen, nausea, vomiting, and diarrhoea for 7 days.**

On examination the general condition was poor. The blood pressure was 90mm systolic, and **pulse rate was around 180/minute.**

The abdominal examination revealed tympanic distension of the abdomen, and the bowel sounds were absent.

Routine blood tests like CBC, blood sugar, serum creatinine, and tests for HIV and hepatitis ordered.

Hb 12.7

Tc 8810

Apc 2.42

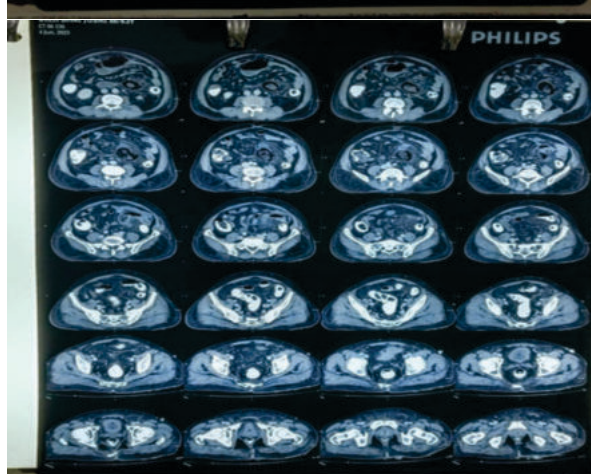
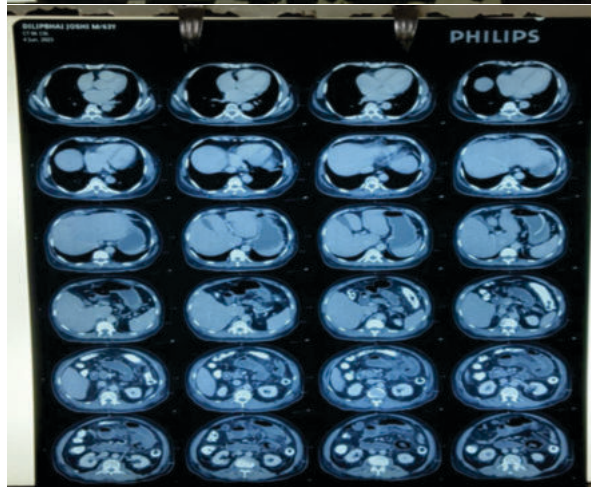
The patient also underwent radiological examination like plane X-ray abdomen and Ultrasonography of abdomen.

The plane x-ray abdomen was not showing any fluid levels and was without any positive findings.

The USG abdomen revealed dilated bowel loops of intestine 50mm diameter of duodenum rest bowel was collapsed and duodenum was hypoperistaltic p/o Duodenal obstruction

Cect -

- Evidence of air and fluid filled dilated small bowel loops max. diameter 37mm with transient point at left lumbar region.
- Multiple air foci in jejunal walls with extraluminal air foci in left lumbar region p/o **Pneumatosis Intestinalis with sealed off jejunal perforation** with evidence of non enhancing filling defect seen in contrast column of distal superior mesenteric artery with involved segment of 45mm p/o **Thrombus formation**
- Atherosclerotic changes seen in aorta and its branches.

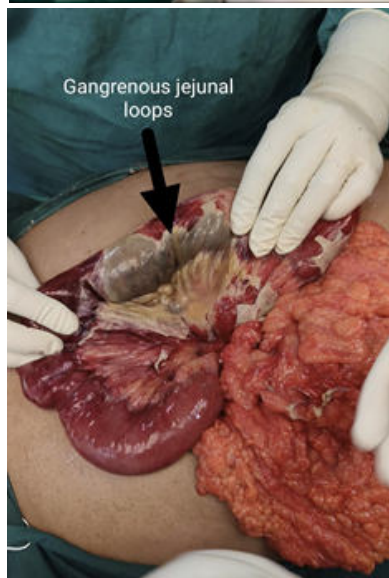


ECG changes suggested of Atrial fibrillation and Under physician guidance patient was started on Inj Mpl ~Dilzem~Coderone.

Emergency surgery was planned. The condition of the patient stabilized with adequate IV fluids, antibiotics, and analgesics.

The abdomen opened through a midline incision. On opening the abdomen, almost whole of the small intestine was found gangrenous.

20-30 cc purulent fluid was drained and **About 70 CMs of the jejunum Loops 25 cm from Dj flexure was resected** and **end to end anastomosis of the viable loops of intestine - Jejunojejunal anastomosis.**



In the postoperative period, the patient had a smooth recovery along with anticoagulant therapy which included Inj Lmwh 0.6 mg sc till pod 10

Followed by oral anticoagulant

Tab. Dabigatran etexilate (110mg) 1-0-1

With
 Tab Ecospirin
 Tab atorvastatin
 Tab codarone
 Tab clopidogrel
 Tab carvedilol
 Tab aldecetone
 Tab mpl

Patient was discharged on above mentioned medication on Pod 16 after the patient recovered and was observed to be clinically improving following the plan of management undertaken thus supporting the overall approach to the case and was able to do the daily activities without any difficulty and is able to live healthy lifestyle on his own without being dependent.

Proper follow up of this patient was taken and care was taken to

avoid any complications or recurrence after being discharged from the hospital.

The **histopathological report** of the resected part of jejunum came out as **Acute on chronic inflammation of jejunum**

DISCUSSION

The acute mesenteric ischemia is a syndrome characterized by reduced blood flow through mesenteric vessels causing bowel ischemia and eventually gangrene. It is a rare disease entity but is potentially life-threatening. It may be arterial or venous. The arterial type may be occlusive or nonocclusive. The cause of occlusion may be embolism or thrombus from various sources.

In 1930, Cokkinis remarked, **“Occlusion of the mesenteric vessels is apt to be regarded as one of those conditions of which the diagnosis is impossible, the prognosis hopeless, and the treatment almost useless.”**

The clinical presentation is that of intestinal obstruction.

The pain is sudden and disproportionate to physical examination findings. It is moderate to severe, diffuse and is nonlocalised. It is constant and many times colicky. Nausea and vomiting are found in 75% of the patients. Abdominal distension occurs eventually with features of septic and hypovolemic shock. There is hypotension, tachycardia, tachypnea, and fever.

The initial presentation is confusing, and late diagnosis carries a high mortality. It is essential to have a high degree of suspicion especially in elderly patients with atrial fibrillation, MI, endocarditis, valvular diseases, sickle cell disease, etc. A diagnosis of AMI should be considered in all elderly patients with abdominal pain, especially if the pain is disproportionate to physical examination findings.

Plane X-Ray Abdomen:

Radiographic signs are nonspecific and appear when bowel infarction has already set in. However it may show presence or absence of perforation, pneumatosis intestinalis (i.e. submucosal gas), thumb-printing of the bowel wall, and portal vein gas as of late findings.

CT and CTA:

Contrast-enhanced computerized tomography (CECT) has proved very valuable for the assessment of mesenteric ischemia. Multiarray spiral scanners allow detailed examination of both small bowel and mesenteric vessels. It has sensitivities of 96-100% and specificities of 89-94%.

Angiography:

The angiography is considered a standard investigation for the diagnosis and preoperative planning in AMI but is not done frequently.

Ultrasonography:

It is less sensitive than Angiography. It cannot detect the clot beyond the proximal main vessels and also fail to diagnose NOMI. The presence of dilated loops of bowel further reduces its sensitivity and specificity. However, it may show a thrombus or reduced blood flow in the involved artery or vein. It may also show portal venous gas, biliary diseases, free peritoneal fluid, thickened bowel walls, and intramural gas. Echocardiography may confirm the source of embolization or show valvular pathology.

Treatment consideration:

The patients with SMA occlusion or ischemia are usually in a highly toxic state they need resuscitation before surgical intervention. Every effort is made to improve his cardiovascular status. Vasopressor at best is avoided since it may worsen ischemia. Any arrhythmia, congestive cardiac failure or myocardial infarction is treated accordingly. Oxygen is administered to maintain saturation between 96 to 99%. Broad spectrum antibiotics are started to combat peritonitis and septic shock. Appropriate analgesics are also indicated.

Regardless of the aetiology, all cases of mesenteric ischemia with signs of peritonitis and possible bowel infarction need immediate surgical intervention. If the patient is presented after 24-48 hours and gangrene has already set in, so, resection of the gangrenous bowel and anastomosis of the remaining bowel is done — minimum bowel length required to be retained 1.2 meters. Otherwise patient has high mortality

due to, short bowel syndrome. Development of septicemia, ARDS, DIC, and postoperative leak are common complications. In the postoperative period the blood pressure, haemoglobin level, oxygen saturation, urine output are closely monitored. Heparin may be used to reduce thrombotic events. Papaverine may be administered to reduce the vasospasm. Antibiotics are continued to prevent any septic event. Cardiac evaluation should be done and closely monitored. In the postoperative period, paralytic ileus is expected and is appropriately managed. The short bowel syndrome: It is the symptom complex after massive small bowel resection, i.e. resection more than 70%. Minimum bowel length required is 1.2 meters. Proximal jejunal resection is better tolerated than ileal resection. The ileum is more adaptive and can increase absorptive capacity more efficiently. The adaptation of massive bowel resection is better tolerated if the caecum, ileo-caecal valve, and ileum, as much as possible, are retained. Ileo-caecal resection interrupts the enterohepatic circulation of the bile salts, which in colon gets metabolized into secondary bile salts. These secondary bile salts block the absorption of water and electrolytes.

The outcome of the short bowel syndrome includes severe malabsorption, severe dehydration, gall stone formation, urinary calculi due to increased oxalate levels, diarrhoea, water, and electrolyte imbalance, etc.

CONCLUSION

The key to success is early diagnosis and treatment, which is most of the time not possible. A high degree of suspicion helps in the appropriate investigation and early intervention. Pain in the abdomen, out of proportion of physical findings, cardiac diseases, advanced age, sickle cell disease should arouse the doubt of Superior mesenteric ischemia/occlusion.

Learning points

1. **Late** presentation invariably causes gangrene of the affected bowel.
2. The plane X-Ray abdomen may be normal. There may not be dilated bowel loops with fluid levels so typical of intestinal obstruction because this is an adynamic type of intestinal obstruction.
3. Intestinal obstruction is suspected due to the cardinal signs like pain, distension of abdomen, vomiting, and constipation.
4. Many times the exact diagnosis of vascular obstruction is reached only on opening the abdomen and not before.

REFERENCES

1. Patel A, Kaleya RN, Sammartano RJ. Pathophysiology of mesenteric ischemia. Surg Clin North Am.
2. Acosta S. Mesenteric ischemia. Curr Opin Crit Care.
3. Clair DG, Beach JM. Mesenteric Ischemia. N Engl J Med.
4. Acosta S, Bjorck M. Acute thrombo-embolic occlusion of the superior mesenteric artery: a prospective study in a well-defined population. Eur J Vasc Endovasc Surg.
5. Duran M, Pohl E, Grabitz K, Schelzig H, Sagban TA, Simon F. The importance of open emergency surgery in the treatment of acute mesenteric ischemia. World J Emerg Surg.
6. Stoney RJ, Cunningham CG. Acute mesenteric ischemia. Surgery.
7. Chang RW, Chang JB, Longo WE. Update in management of mesenteric ischemia. World J Gastroenterol.
8. Horton KM, Fishman EK. Multidetector CT angiography in the diagnosis of mesenteric ischemia. Radiol Clin N Am.
9. Schoots IG, Koffeman GI, Legemate DA, Levi M, van Gulik TM. Systematic review of survival after acute mesenteric ischaemia according to disease aetiology. Br J Surg.