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MESENTERIC ISCHEMIA- A CHALLENGING DIAGNOSIS

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INTRODUCTION

- Mesenteric ischemia is a rare but potentially life-threatening condition characterized by the insufficient blood flow to the intestines, leading to tissue damage and, if untreated, necrosis of the affected bowel segments.
- This diagnosis is often difficult to recognize due to its nonspecific symptoms.
- However, early identification and intervention are critical, as timely treatment can significantly reduce the risk of severe complications, including bowel perforation, sepsis, and even death.

CASE PRESENTATION

- 53 year/ Male

- Abdominal pain
- Vomiting ***SINCE 5 DAYS***
- Loose stools

- **Past history** of CVST with ***stroke*** (2 years ago)- (non compliant to medications, stopped 2 months ago)

General examination

- Patient conscious, co-operative

- VITALS
- PR- 110/min
- BP- 150/90mmHg
- SpO2- 95% on RA
- RR- 30/min
- Random BSL-150mg/dl

- No pallor, icterus, cyanosis, clubbing, lymphadenopathy or edema

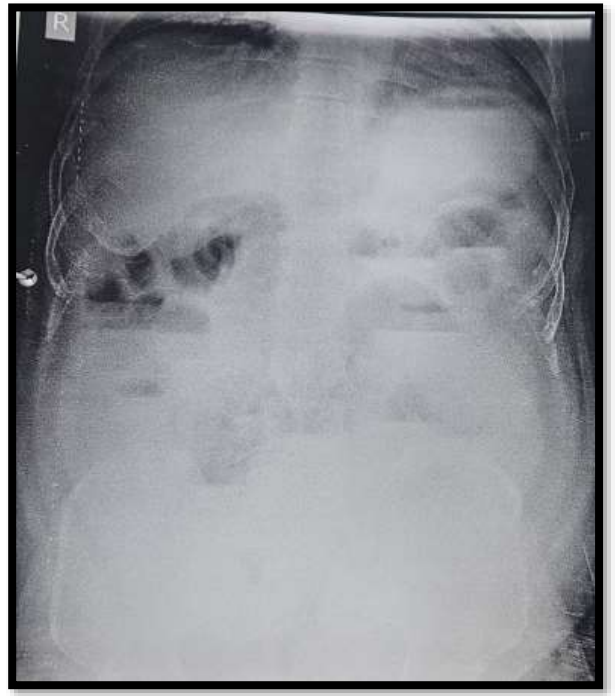
Abdominal Examination

- Tense, distended
- Generalized Guarding present
- Bowel sounds- Absent

DRE: Empty rectum, gloves not stained with stool, no active bleed

Radiological investigations

- **CECT (AP) (2 days back)[***outside hospital***]-** No abnormalities detected
- **X-ray Erect abdomen (In DY casualty)-** Multiple air fluid levels
- **CECT (AP) (In DY casualty)-** Dilatation of jejunal and ileal loops with minimal/ non enhancing asymmetrical eccentric wall thickening (approx. 10cm length) of ileal loops with adjacent fat stranding with Filling defect noted in ileal branch of SMA s/o mesenteric ischemia secondary to thrombosis of ileal branch of SMA.

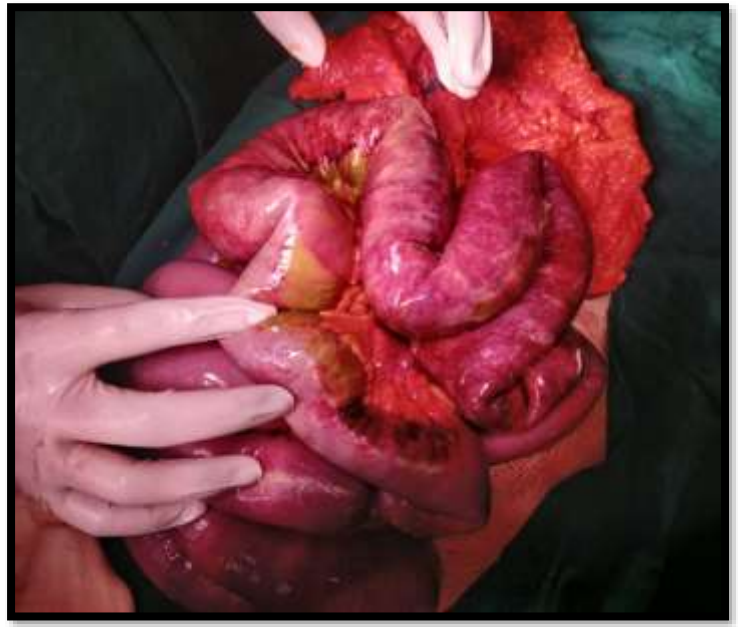


Patient underwent *EXPLORATORY LAPAROTOMY*

- **Intraoperative Findings:**
  - Gangrenous jejunal loop (approx. 80 cm from DJ flexure)
  - Approximately 100cm of gangrenous jejunum resected

  - Doubtful vascularity of distal end of small bowel → exteriorized as stoma

HISTOPATHOLOGICAL REPORT WAS CONSISTENT WITH GANGRENOUS BOWEL



Post Operative Period

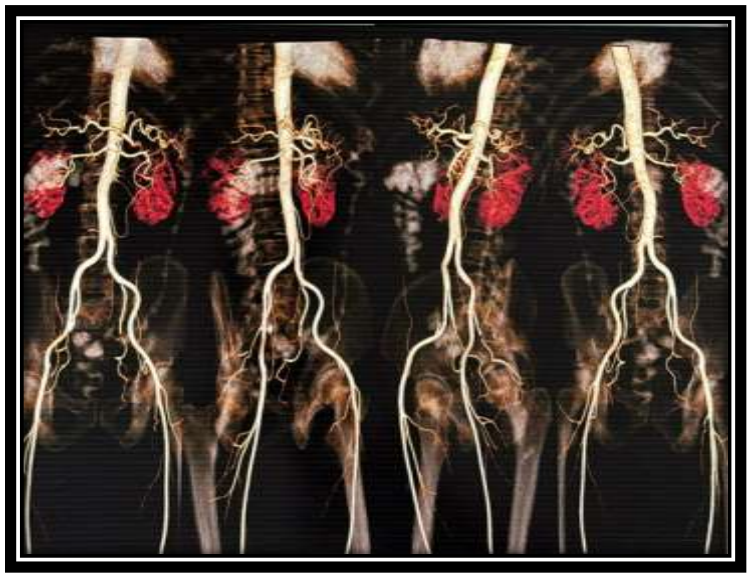
- Developed high output stoma (with a maximum output of 4800ml in 24 hr)
- Multiple Electrolyte Abnormalities(K+, Na+ and Ca+)
- Surgical site infection

Anticoagulants (low molecular weight heparin) were started 6 hrs post operatively .

On **POD 42** repeat CT angiography was done

SMA trunk appears normal, shows good contrast opacification.

Few right paramedian branches of SMA appear thrombosed, likely old thrombosis



On POD 44 Patient underwent ***elective stoma reversal-***

Intraoperative findings:

1. No evidence of ischemia of bowel present.

2. Side to side jejuno-ileal anastomosis was performed 80cm from DJ flexure.

- Nutritional Therapy and fluid management was continued throughout.
- Electrolyte correction was given as required.

Post operative stay was uneventful and the patient was **discharged** on POD11

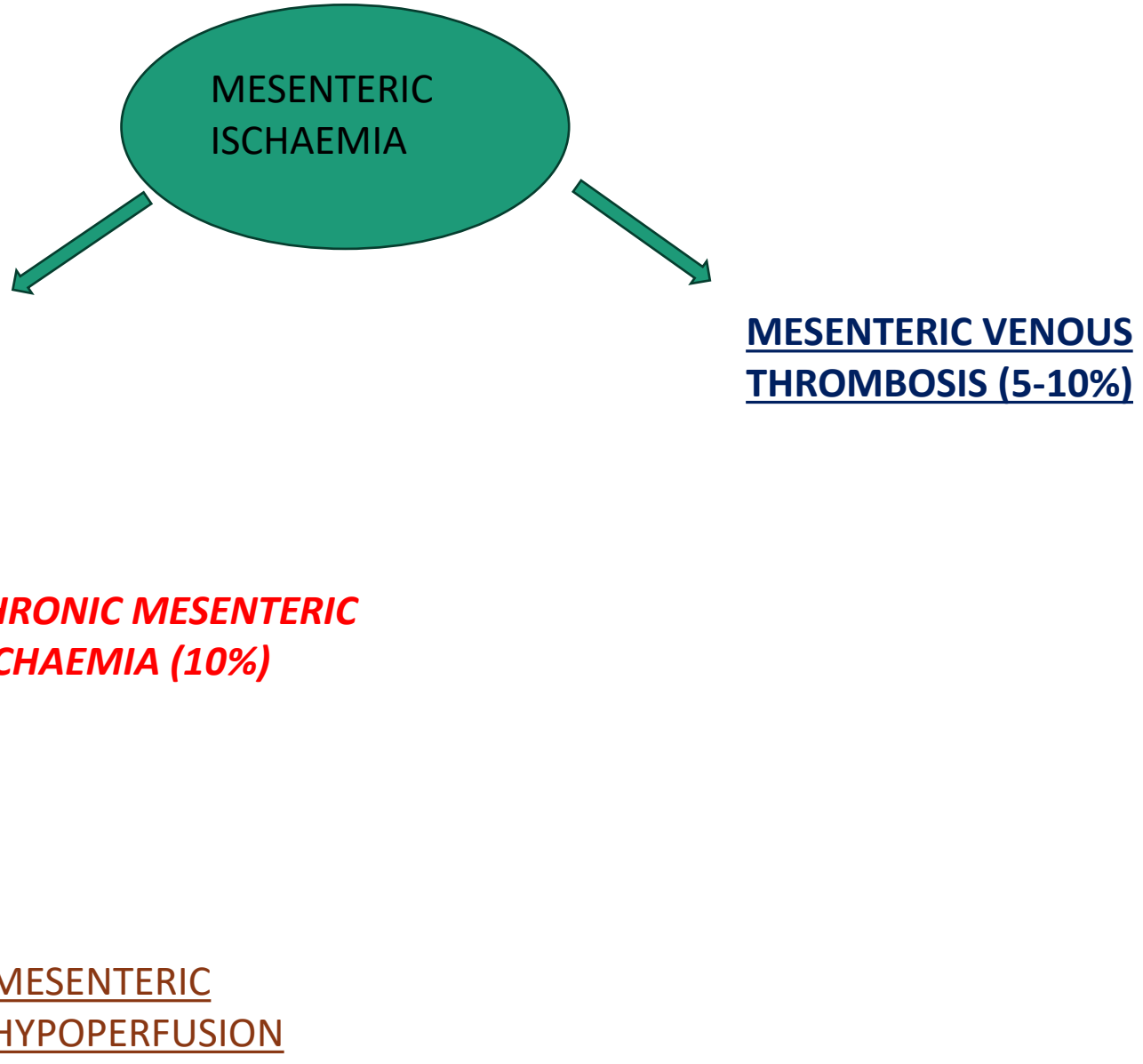
- On discharge, patient was tolerating oral intake and he was advised frequent low volume high calorie diet. He was also given nutrition supplementation along with oral factor Xa inhibitor(tab Rivaroxaban 10mg hs).

DISCUSSION

Mesenteric Ischemia is a potentially life threatening condition that results in inadequate blood flow through the mesenteric vessels resulting in ischemia and eventually gangrene of the bowel wall.

- Uncommon but life threatening disease with an incidence of – 1/1000 hospital admissions
- Mortality remains as high as 60 – 80 %
- Poor prognosis.

CLASSIFICATION



CAUSES OF MESENTERIC ISCHAEMIA ON THE BASIS OF AETIOLOGY

ARTERIAL OCCLUSION	VENOUS OCCLUSION	NOMI
• ARRHYTHMIAS • MI • ATHEROSCLEROSIS • TAKAYASU ARTERITIS • PAN • KAWASAKI DISEASE • SLE • WEGNERS GRANULOMATOSIS • BUERGER DISEASE	• INFILTRATIVE • NEOPLASTIC • INFLAMMATORY • HYPERCOAGULABILITY • PREGNANCY • OCP • SICKLE CELL DISEASE • PROTEIN C/S DEFICIENCY • THROMOBOCYTOSIS	• HYPOTENSION • SHOCK • DIGOXIN • ANTIHYPERTENSIVES • DIURETICS • COCAINE • HEROIN

(1,2)

ISCHAEMIC DAMAGE FOLLOWING VASCULAR INSULT

↓ *15 MIN TO 3 HOURS*

STAGE 1 -MILD AND SUPERFICIAL NECROSIS OF MUCOSA

↓ *3 TO 6 HOURS*

STAGE 2 – DAMAGE TO SUBMUCOSA AND MUSCULARIS PROPRIA **REVERSIBLE DAMAGE**

↓ *RELEASE OF CYTOKINES , PLATELET ACTIVATING FACTOR AND TNF LEADING TO INFLAMMATORY RESPONSE*

AFTER 6 HOURS

STAGE 3 – TRANSMURAL BOWEL INFARCTION **IRREVERSIBLE DAMAGE**

↓

BREAKDOWN OF MUCOSAL BARRIER AND BOWEL LOSES RESISTANCE TO BACTERIAL INVASION

↓

BACTEREMIA AND SEPSIS

Biochemical investigations

AMYLASE AND LIPASE

ABG

LACTATE

D DIMER

CRP

CBC

(2,3)

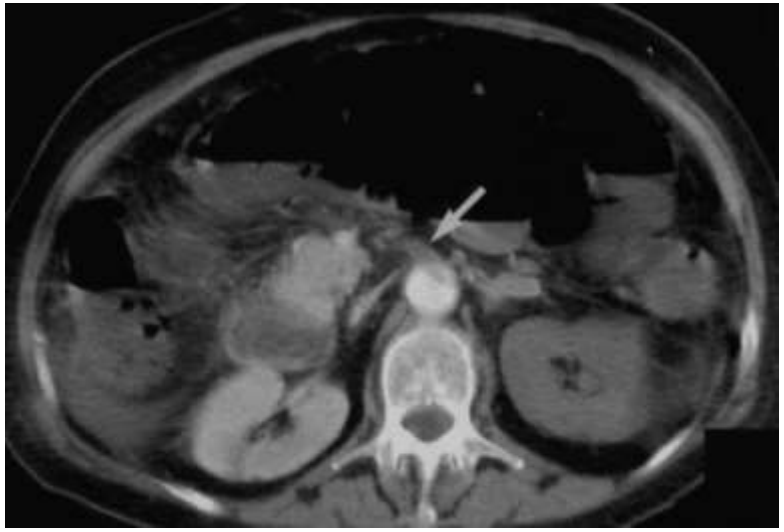
RADIOLOGICAL ASPECTS

MDCT/CECT

1,Vessel Evaluation :

•**Mesenteric Artery Thrombosis/Embolism**: Filling defect or absence of contrast .

•**Arterial Occlusion**: Narrowing or occlusion of mesenteric arteries.



2.Bowel Wall Changes (MDCT):

•**Absence of Bowel Wall Enhancement**: Indicates ischemia.

•**Bowel Wall Edema**: Thickened, hypodense bowel loops.

•**Pneumatosis Intestinalis (CECT)**: Gas in bowel wall, indicating infarction.

•**Mesenteric Fat Stranding (MDCT/CECT)**: Inflammatory changes around mesenteric vessels.

•**Mesenteric Venous Gas (CECT)**: Gas in mesenteric or portal veins, indicating severe ischemia.

•**Absent/Reduced Blood Flow (MDCT/CECT)**: Poor perfusion in bowel, indicating ischemia.

•**Peritoneal Fluid (CECT)**: Free fluid or ascites, suggesting bowel perforation.

OTHER RADIOLOGICAL MODALITIES

1. **CT Angiography (CTA) -**due to its ability to provide high-resolution images of mesenteric vessels .
2. **X-ray**:
   - **Non-specific** findings.
   - **Pneumatosis Intestinalis** (bowel infarction).
   - **Free Air** (bowel perforation).

3.Ultrasound:
- **Non-invasive, Fast** for initial screening.
- **Bowel Wall Edema** (ischemia).
- **Mesenteric Doppler**: No/reduced blood flow in SMA.

ACUTE MESENTERIC ISCHAEMIA

NO PERITONITIS

EMBOLUS

- ASPIRATION
- PHARMACOLOGICAL THROMBOLYSIS
- ENDOVASCULAR MECHANICAL EMBOLECTOMY
- OPEN EMBOLECTOMY

THROMBUS

- STENTING

PERITONITIS

EXPLORATORY LAPAROTOMY

OPEN EMBOLECTOMY / STENTING WITH DAMAGE CONTROL SURGERY

Take Home Message

- Disproportionate presentation of mesenteric ischemia makes the diagnosis a challenge and requires a high clinical suspicion.
- Rapid progression of the disease can cause bowel gangrene ,sepsis and multiorgan failure.
- Timely intervention and early diagnosis of acute mesenteric ischemia enable endovascular procedures, potentially preventing extensive bowel damage
- Correlating the radiological imaging with the clinical findings is helpful for the timely intervention to prevent the rapid progression of the disease.
- Timely intervention such as surgery or thrombolysis helps reducing the morbidity and the mortality.

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THANK YOU