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CONTEMPORARY MANAGEMENT OF MESENTERIC ISCHAEMIA: NEW LESSONS LEARNT.

Surgery

Dilip Kumar Das	Associate Professor, Department of Surgery, RG Kar Medical College and Hospital, Kolkata.
Sudipta Samanta	Undergraduate student;RGkar Medical college
Agrima Mullick	Undergraduate student;RGkar Medical college
Anurag Sinha	MBBS, RMO, Department of Surgery, Sinha Nursing Home, Kishanganj
Mahua Roy Mondal	Assistant professor; Surgery.RGKar Medical college,Kolkata.
Ramanuj Mukherjee *	MS DNB MRCS MNAMS *Corresponding Author

KEYWORDS

Chronic Mesenteric Ischemia

Chronic mesenteric ischemia is a occlusive disease of mesenteric vessels which is otherwise rare but potentially devastating. Presenting age is more than 60 years and favouring female sex 3 times more than male.

Aetiology:

1. Atherosclerosis
2. Polyarteritis Nodosa
3. Median arcuate syndrome (celiac artery compression syndrome).

Amongst all aetiologies Atherosclerosis is the most common of all.

Clinical Presentation of Patient:

A. Occlusive Mesenteric Ischemia:

a. Intestinal Claudication: 2 out of 3 vessels (celiac artery, Superior mesenteric artery, Inferior Mesenteric Artery) must be occluded.
b. Intestinal Angina: Post prandial abdominal pain.
c. Weight Loss: Due to decreased intake of food which is also called "Food Fear".
d. Persistent nausea
e. Diarrhoea.

B. Median Arcuate Ligament syndrome:

Typically occurs in case of young females aged 20-30 years who often complains of non-specific abdominal pain localising in the upper abdomen and aggravating with intake of meals.

C. Non-occlusive Mesenteric Ischemia:

a.Commonly patients are critically ill elderly patients with following co-morbidities:

i. Congestive Cardiac Failure
ii. Acute Myocardial Infarction with Cardiogenic Shock
iii. Pancreatitis
iv. Hypovolemic/ Haemorrhagic Shock
v. Sepsis

b. Clinically patients present with

i. Abdominal Pain
ii. Progressive Abdominal distension
iii. Acidosis

Diagnosis:

1. Duplex USG
2. Spiral CT scan with 3-D reconstruction
3. MRA
4. Biplanar mesenteric Arteriography: This is the GOLD STANDARD for diagnosis.

Clinical Condition	Biplanar Mesenteric Arteriography Appearance
1. Chronic Mesenteric Occlusion	Presence of collaterals.
2. Median Arcuate Ligament Syndrome	a. Celiac Artery compression augmenting with deep expiration b. Post Stenotic Dilation
3. Non-occlusive Mesenteric Ischemia	Segmental mesenteric Vasospasm with a relatively normal appearing superior mesenteric artery.

Treatment:

A. Goal: Revascularisation of mesenteric vessels and preventing from bowel gangrene.
B. Options: a. Surgical b. Endovascular

Surgical	Transaortic Endarterectomy	Ostial lesions of patent Celiac Trunk or Superior Mesenteric Artery (Atherosclerosis)
	Mesenteric Artery Bypass	• Occlusive lesions 1-2 cm distal to mesenteric origin. • Bypass either antegrade from supraceliac aorta or retrograde from infrarenal aorta or iliac artery. • Both autogenous saphenous vein or prosthetic grafts are used. • For Celiac Artery Compression Syndrome, release of ligamentous structure + Bypass graft.
Endovascular	Balloon Dilatation with or without stent	• Suitable for Short segment Occlusion. • Patients with medical comorbidities due to higher risk of surgery. • Recurrent disease or anastomotic stenosis following previous open mesenteric revascularisation. • For Non-occlusive Mesenteric Ischemia, selective mesenteric arterial catheterisation followed by infusion of vasodilatory agent e.g. papaverine.

Acute Mesenteric Ischemia

Aetiology:

1. Thrombotic or Atheromatous Narrowing which involves origin of arteries sparing collaterals.
2. Embolic where emboli originating from cardiac source e.g. Atrial Fibrillation.

Clinical Presentation:

Type	Symptoms	Signs
Thrombotic	Progressive with Post prandial abdominal pain, weight loss followed by sudden onset abdominal pain with distension, fever, nausea, vomiting, bloody diarrhoea.	1. Diffuse abdominal Tenderness 2. Rebound Tenderness 3. Rigidity
Embolic	1. Sudden onset abdominal pain with distension, fever, vomiting, nausea, bloody diarrhoea. 2. Progressive features are not much pronounced. 3. History of source of emboli present e.g. Atrial Fibrillation.	1. Diffuse abdominal Tenderness 2. Rebound Tenderness 3. Rigidity

Diagnosis:

1. History

2. Plain Abdominal Xray:

a. Pneumoperitoneum, pneumatosis intestinalis, Gas in PV: Infarcted Bowel
b. Adynamic Ileus with Gasless Abdomen: most common finding

3. Biplanar Mesenteric Arteriography: GOLD STANDARD investi gation.

a. Embolic: Meniscus Sign with abrupt cut-off at the origin of MCA.
b. Thrombotic: Tapering of most proximal Superior Mesenteric Artery at 1-2 cm from its origin.

4.CTA

Treatment:

A.Initial Management:

Ÿ Fluid resuscitation
_ Systemic Anticoagulation with Heparin
Ÿ Significant metabolic acidosis not correcting with fluid: correction with NaHCO3.
_ Central venous catheter, peripheral arterial catheter, Foley catheter: hemodynamic status monitoring.
Ÿ Appropriate Antibiotic.

B.Specific Management:

1. Preoperative Mesenteric Arteriography: Helps to confirm diagnosis and plan for treatment.

2. Embolic AMI:

Ÿ Opening of abdomen through median longitudinal incision and identification of SMA and embolectomy is done
_ Restoring SMA flow and assessing intestinal viability. Non-viable bowel is resected.
Ÿ Evaluation: 2nd look Laparotomy 24-48 hrs after the first operation and assessing bowel viability. Non-viable bowel is resected.

3.Thrombotic AMI:

Ÿ Arteriography followed by PTA or Bypass Graft with or without resection of gut
_ For Bypass Saphenous Vein is material of choice.
Ÿ Bypass graft may originate from Aorta or iliac Artery.

4.Catherter Directed Thrombolytic Therapy(CDT):

Ÿ Potentially useful treatment modality for AMI.
_ Done during Diagnostic Angiography.
Ÿ Has very high probability of restoring mesenteric blood flow when initiated within 12 hrs of symptoms.
_ Successful resolution facilitate identification of underlying mesenteric occlusive disease process & subsequent operative revascularisation electively.