

mesenteric ischaemia
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definition

acute mesenteric ischaemia is a syndrome in which inadequate blood flow through the mesenteric circulation causes ischaemia and eventual gangrene of the bowel wall

- acute mesenteric ischaemia can be divided into:
 - (i) acute mesenteric arterial embolus (50% of cases)
 - (ii) acute mesenteric arterial thrombosis (25% of cases)
 - (iii) nonocclusive mesenteric ischaemia (20% of cases)
 - (iv) mesenteric venous thrombosis (<10% of cases)

aetiology

- arterial disease:
 - embolic causes include mural thrombi after myocardial infarction, atrial thrombi associated with mitral stenosis and atrial fibrillation, vegetative endocarditis, mycotic aneurysm and thrombi formed at atherosclerotic plaques or vascular prosthetic grafts
 - nonocclusive mesenteric ischaemia is caused by a severe reduction in mesenteric perfusion with secondary arterial spasm from causes such as septic shock, hypovolaemia, or vasopressors (eg digoxin, cocaine, vasopressin)
 - rare causes include mechanical obstruction from volvulus, intussusception, tumour compression, aortic dissection, isolated dissection of SMA in trauma
- venous disease:
 - intra-abdominal infection with portal pyemia
 - hypercoagulable states
 - stasis from portal hypertension or mass effect of abdominal tumours
 - direct trauma to mesenteric vessels from surgery

symptoms

- arterial occlusive disease:
 - the most important finding is pain out of proportion to the physical findings; pain may be unresponsive to narcotics
 - nausea and vomiting are common (75%)
 - abdominal distention and GI bleeding are primary symptoms in up to 25%
- embolic acute mesenteric ischaemia:
 - has the most abrupt and painful presentation of all types
 - vomiting and diarrhoea are observed
 - because most emboli are of cardiac origin, patients often have atrial fibrillation or a recent MI with mural thrombus; valvular heart disease is a less frequent source
- thrombotic mesenteric ischaemia:
 - typically happens when an artery already partly blocked by atherosclerosis becomes occluded
 - up to 50% have a history of abdominal angina (pain starting soon after and lasting for up to 3 hours after eating)
 - precipitating event that initiates thrombotic mesenteric ischaemia may be a sudden drop in cardiac output from myocardial infarction, CCF or plaque rupture. Dehydration due to illness for another reason may also precipitate it
 - bowel viability is usually better preserved due to the presence of collaterals and onset is usually less severe
- non-occlusive mesenteric ischaemia:
 - occurs mainly in elderly patients and often develops in the context of multiorgan failure
 - mainly patients are taking digitalis
 - symptoms typically develop over several days and patients may have had a prodrome of malaise and vague abdominal discomfort. When infarction occurs they develop increased pain and vomiting
- mesenteric venous thrombosis:
 - symptoms may have been present for weeks
 - many patients have a risk factor for hypercoagulability

signs

- early presentation:
 - tenderness is minimal to non-existent
- late presentation:
 - tenderness becomes severe and may indicate the location of infarcted bowel
 - a palpable tender mass may be present
 - bowel sounds range from hyperactive to absent
 - peritonitis develops
 - signs of septicaemia develop
- AF or heart murmurs may indicate site of embolic origin

investigations

1. bloods:
 - no blood test is sufficiently sensitive or specific and results of blood tests should not delay radiographic study if serious suspicion of mesenteric ischaemia exists
 - WCC rises as disease progresses
 - Hct is initially elevated from third spacing but it decreases with GI bleeding
 - amylase is elevated in 50%
 - metabolic acidosis occurs late in the course
 - lactate is elevated late in the clinical course but persistently normal levels makes diagnosis unlikely
2. X-rays:
 - plain films warranted to exclude perf
 - positive findings are late and non-specific and include thumb printing and portal vein gas
3. CT scanning:
 - CT scan helps to evaluate acute mesenteric ischaemia and to exclude other diagnoses
 - CT angiography has a sensitivity of 96% and a specificity of 94%
 - CT scan may show pneumatosis intestinalis, portal vein gas, bowel wall or mesenteric oedema, abnormal gas patterns, streaking of mesentery and solid organ infarction; bowel oedema is the most common finding
4. USS has a specificity of 92-100% and a sensitivity of 70-89%
5. angiography is the gold standard test
6. MRI & MRA are highly sensitive and specific

treatment

1. iv fluids & fluid balance
 2. NBM
 3. pain control (opioid analgesia)
 4. antiemetics
 5. antibiotics
- NB: avoid inotropes as they will make ischaemia worse
- specific therapies:
 - (i) angiographically infused thrombolytics
 - (ii) angioplasty (limited data only available)
 - (iii) heparin for venous thrombosis