

Acute Mesenteric Ischemia Masquerading as Acid Peptic Disease: A Case Series Highlighting Diagnostic Delay and the Significance of Pain Out of Proportion

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Abstract

Background: Acute mesenteric ischemia (AMI) is a life-threatening vascular emergency with high morbidity and mortality, primarily due to delayed diagnosis. Chronic mesenteric ischemia (CMI) frequently presents with post-prandial abdominal pain and is often misdiagnosed as acid peptic disease (APD), allowing progression to acute-on-CMI. Severe abdominal pain out of proportion to physical examination is a classic but frequently overlooked early sign of AMI.

Materials and Methods: This descriptive observational case series included six adult patients diagnosed with AMI at a tertiary care center between January 2025 and December 2025. Clinical presentation, prior treatment history, risk factors, radiological findings, etiology, management, and outcomes were analyzed with emphasis on diagnostic delay.

Results: The mean age was 52.6 years, and five patients were male. Four patients (66.7%) had chronic post-prandial abdominal pain previously treated as APD. All patients presented with severe abdominal pain disproportionate to clinical findings. Computed tomography (CT) angiography demonstrated predominantly arterial etiologies (83.3%). Five patients (83.3%) required surgical intervention, and one patient (16.7%) succumbed to extensive bowel ischemia. Diagnostic delay was associated with advanced ischemia and increased need for surgery.

Conclusion: AMI may represent progression of unrecognized CMI, particularly in patients with prior post-prandial abdominal pain. Abdominal pain out of proportion to examination is a critical early clinical clue, and AMI must remain an important differential diagnosis until proven otherwise. Early suspicion and prompt CT angiography are essential to prevent bowel necrosis and improve outcomes.

Key words: Acid peptic disease, Acute mesenteric ischemia, Chronic mesenteric ischemia, Computed tomography angiography, Diagnostic delay, Pain out of proportion

INTRODUCTION

Acute mesenteric ischemia (AMI) is a catastrophic abdominal vascular emergency resulting from sudden compromise of the intestinal blood supply. Despite advances in imaging and perioperative care, AMI continues to be associated with high morbidity and

mortality, often exceeding 50%, primarily due to delayed diagnosis and presentation with advanced bowel ischemia.^[1] One of the earliest clinical features is severe abdominal pain out of proportion to physical examination,^[2] reflecting early intestinal ischemia before the development of peritoneal signs; yet this hallmark finding is frequently overlooked in clinical practice. Early diagnosis remains challenging because laboratory markers are non-specific and imaging is often delayed until advanced ischemia develops.

Chronic mesenteric ischemia (CMI) is an under-recognized condition characterized by post-prandial abdominal pain, food fear, and weight loss. Because of non-specific gastrointestinal

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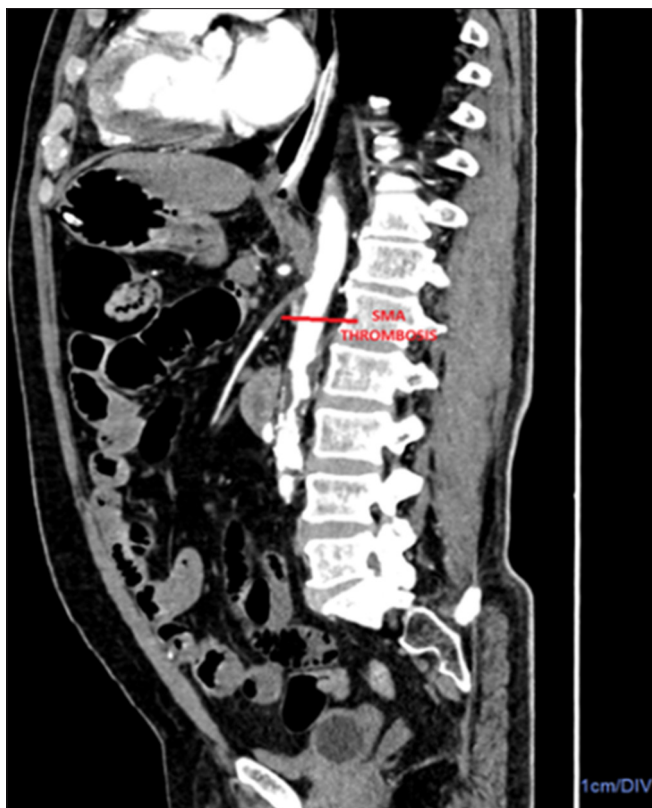


Figure 1: Case 1: Superior mesenteric artery thrombosis (sagittal CT angiography)

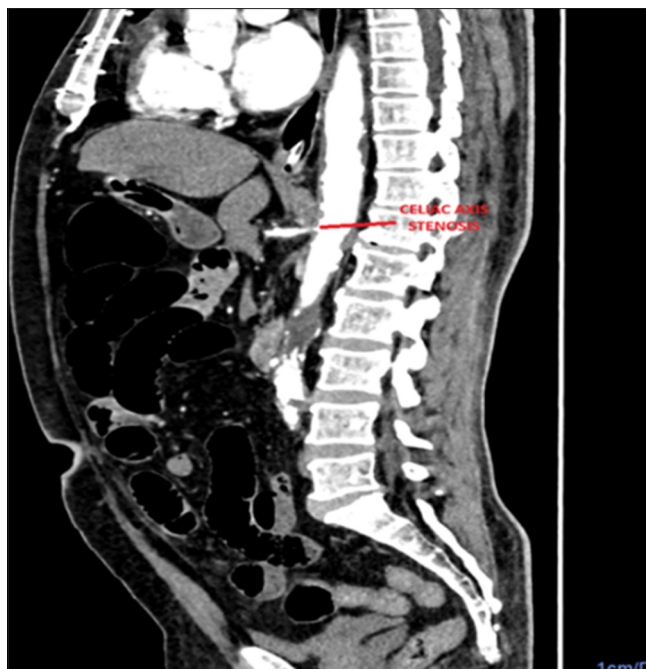


Figure 3: Case 1: Celiac axis stenosis (sagittal CT angiography)

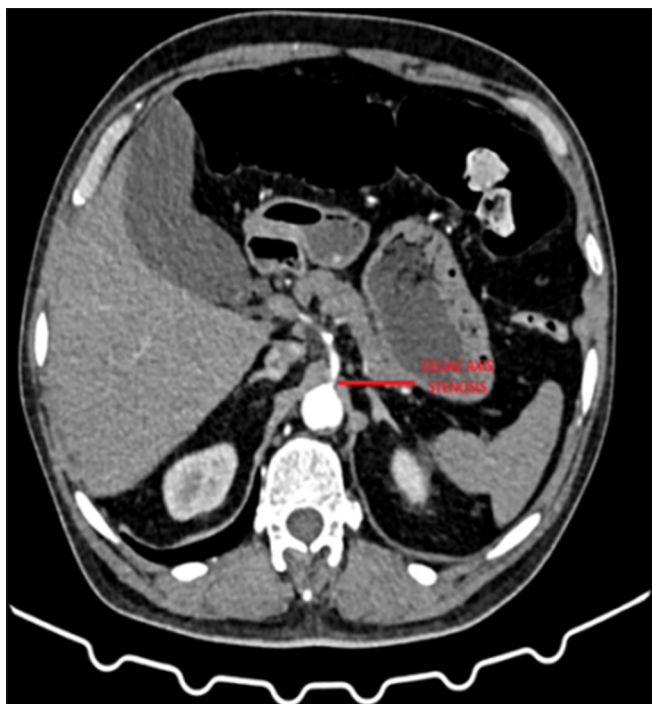


Figure 2: Case 1: Celiac axis stenosis (coronal CT angiography)



Figure 4: Case 1: Ischemic bowel segment – Superior mesenteric artery territory

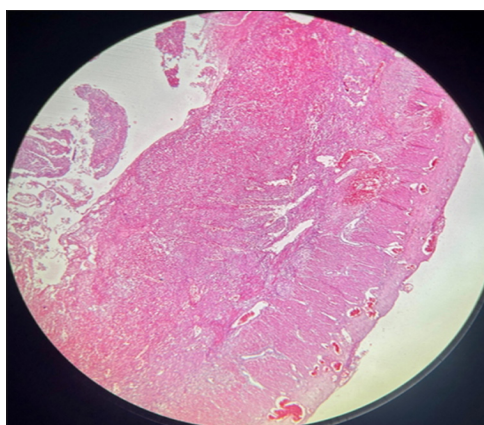


Figure 5: Case 1: Ischemic bowel disease – Histopathological examination

symptoms, CMI is often misdiagnosed as acid peptic disease (APD)^[3] and treated conservatively, allowing progression of mesenteric atherosclerosis and predisposing patients to acute thrombosis, resulting in acute-on-CMI.



Figure 6: Case 2: Ischemic bowel segment – Superior mesenteric artery and Inferior mesenteric artery territories

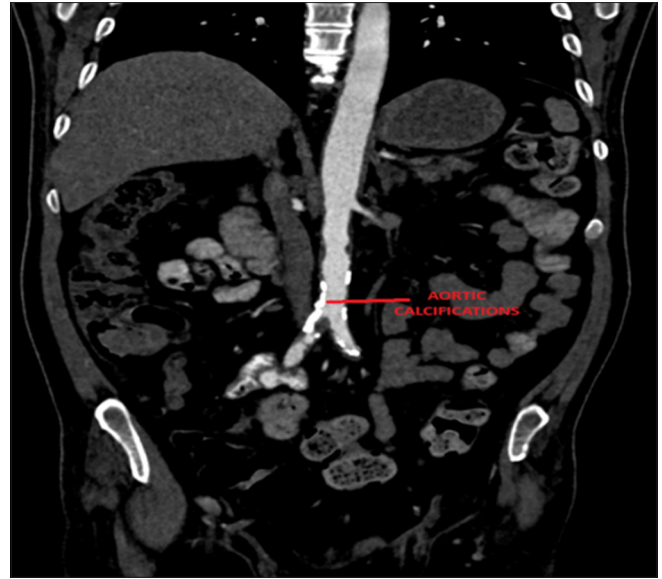


Figure 9: Case 3: Aortic calcifications



Figure 7: Inferior mesenteric artery thrombosis (coronal CT angiography)

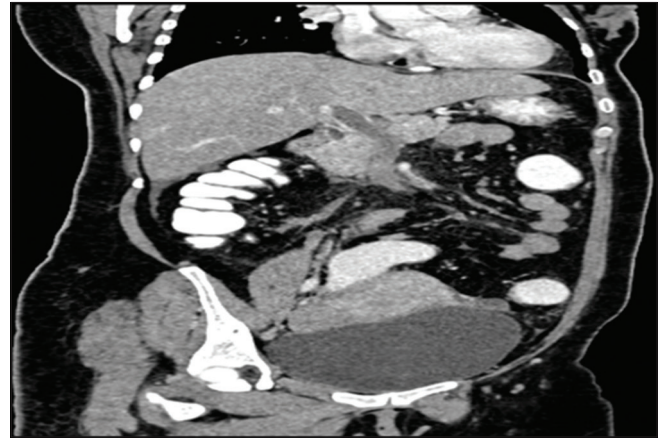


Figure 10: Mesenteric venous thrombosis

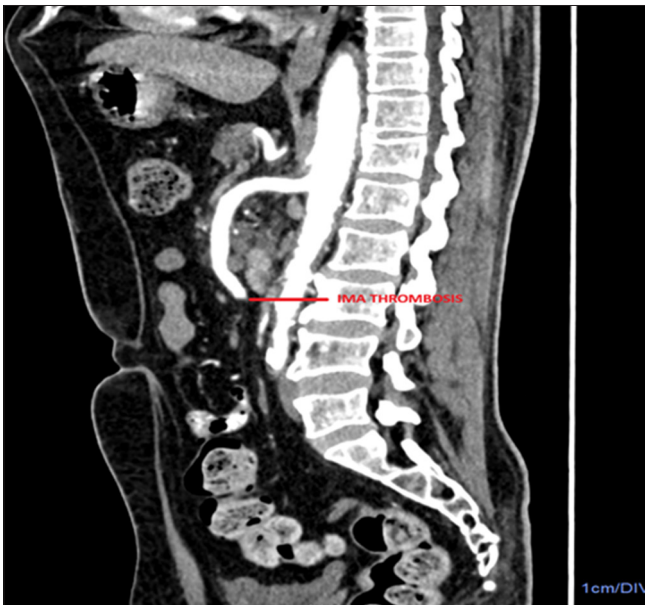


Figure 8: Inferior mesenteric artery thrombosis (sagittal CT angiography)

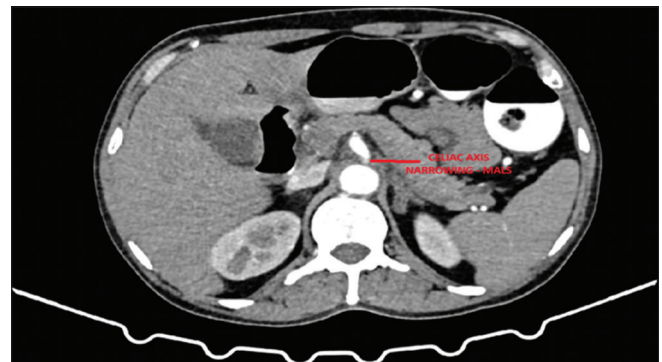


Figure 11: Case 5: Celiac axis narrowing – Median arcuate ligament syndrome

This study aims to evaluate etiological patterns, causes of diagnostic delay, and clinical significance of abdominal pain out of proportion as an early diagnostic marker in AMI.

Table 1: Demographic profile and symptom pattern

Case	Age/Sex	Atherosclerotic/systemic risk factors	Chronic post-prandial pain	Duration of chronic symptoms	Prior treatment as APD
1	67/M	Smoking, coronary artery disease	Present	5 years	Yes
2	55/M	Smoking	Present	3 months	Yes
3	41/M	Smoking, polycythemia	Absent	—	No
4	55/F	Acute pancreatitis	Absent	—	No
5	52/M	Serositis	Present	Several months	Yes
6	46/M	Hypertension, vasculitis	Present	1 year	Yes



Figure 12: Case 5: Superior mesenteric artery thrombosis with median arcuate ligament syndrome

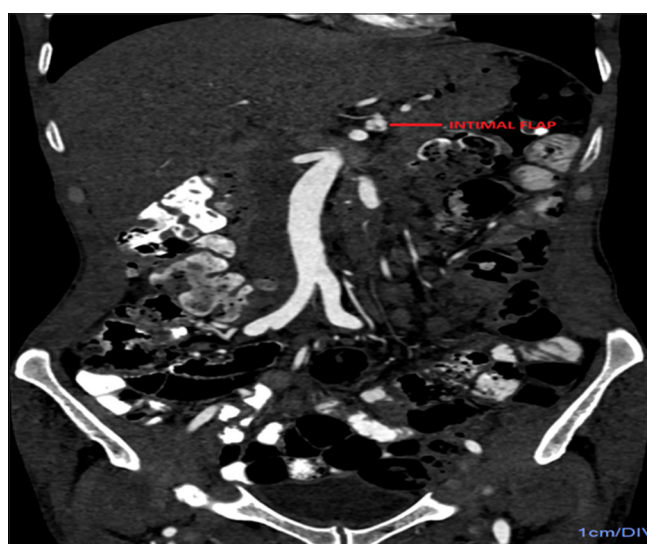


Figure 14: Celiac axis intimal flap with thrombus

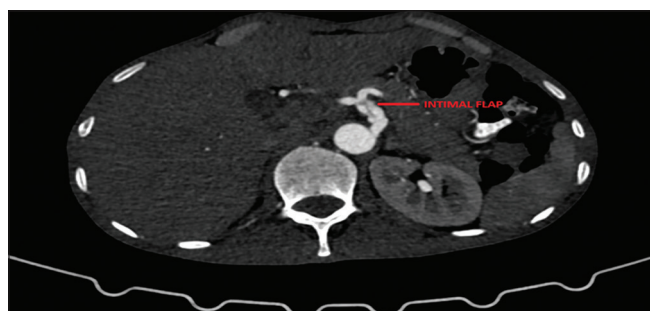


Figure 13: Celiac axis dissection with intimal flap

MATERIALS AND METHODS

Study Design and Setting

This prospective descriptive observational case series was conducted at a tertiary care teaching hospital between January 2025 and December 2025.

Study Population

Adult patients (≥ 18 years) diagnosed with AMI based on clinical presentation and computed tomography (CT) angiographic findings were included.

Inclusion Criteria

1. Age ≥ 18 years
2. CT angiography confirmed AMI.

Exclusion Criteria

1. Non-occlusive mesenteric ischemia
2. Incomplete clinical data.

Sampling Method

Consecutive sampling was used.

Data Collection

Demographic data, comorbidities, vascular risk factors, duration of symptoms, prior treatment for APD, radiological findings, etiology, management, and outcomes were recorded. Diagnostic delay was defined as prior misdiagnosis, inappropriate treatment, or absence of vascular evaluation before confirmation of mesenteric ischemia.

Radiological Evaluation

CT angiography is the cornerstone for diagnosis^[4] All patients underwent contrast enhanced CT abdomen and pelvis with CT angiography assessing celiac artery, superior mesenteric artery (SMA), inferior mesenteric artery (IMA), mesenteric veins, bowel wall enhancement, and secondary ischemic changes.

Management Strategy

Treatment was individualized based on hemodynamic status, imaging findings, and bowel viability. Conservative

management included anticoagulation and supportive care. Surgery was performed in cases of bowel ischemia, peritonitis, or clinical deterioration.

Outcome Measures

Primary outcomes included etiology and management. Secondary outcomes included need for bowel resection, histopathology, and mortality.

Statistical Analysis

Data were analyzed descriptively. Continuous variables were

expressed as means, and categorical variables as percentages.

Ethical Considerations

Institutional Ethics Committee approval was obtained, and informed consent was taken.

RESULTS

Six patients were included in this prospective case series. The baseline demographic profile, vascular risk factors, chronic symptom pattern, and prior treatment history are summarized in Table 1. The mean age was 52.6 years (range: 41–67 years), and five patients (83.3%) were male. Common risk factors included smoking, coronary artery disease, hypertension, vasculitis, polycythemia, and inflammatory disorders.

Four patients (66.7%) had a history of chronic postprandial abdominal pain previously treated as acid peptic disease without vascular evaluation, contributing significantly to diagnostic delay (Table 2). All patients presented acutely with severe abdominal pain out of proportion to physical examination findings.

Case 1 had chronic postprandial abdominal pain for 5 years and presented with acute superior mesenteric artery

Table 2: Clinical presentation and diagnostic delay pattern

Case	Initial clinical label	Reason for missed diagnosis	Trigger for acute presentation
1	APD	Chronic post-prandial pain treated medically	Acute SMA thrombosis
2	APD	Non-specific abdominal pain	Progression of atherosclerosis
3	Intestinal obstruction	Acute presentation	IMA thrombosis
4	Pancreatitis	Overlapping symptoms	Venous thrombosis
5	APD	Post-prandial pain misattributed	SMA thrombosis
6	APD	Chronic pain without vascular workup	Vasculitic flare

APD: Acid peptic disease, SMA: Superior mesenteric artery, IMA: Inferior mesenteric artery

Table 3: CT angiographic findings and etiology

Case	Arterial findings	Venous findings	Bowel findings	Other findings	Final AMI pattern
1	SMA occlusion, celiac stenosis	—	Ischemic changes	—	Acute-on-chronic arterial AMI
2	Multi-vessel mesenteric atherosclerosis	SMV thrombosis	Diffuse ischemia	—	Acute-on-chronic multi-vessel AMI
3	IMA Thrombosis	—	Ischemic changes	CIA thrombosis	Primary arterial AMI
4	—	SMV, portal, splenic vein thrombosis	Jejunal thickening, comb sign	—	Venous AMI
5	Celiac compression, proximal SMA thrombosis	—	Ischemic changes	MALS	Arterial AMI (MALS-related)
6	Celiac dissection, SMA occlusion	—	Ischemic changes	CIA thrombosis	Arterial AMI with vasculitis

CT: Computed tomography, SMA: Superior mesenteric artery, IMA: Inferior mesenteric artery, CIA: Common iliac artery, AMI: Acute mesenteric ischemia, SMV: Superior mesenteric vein, MALS: Median arcuate ligament syndrome

Table 4: Management and outcomes

Case	Initial management	Surgery performed	Bowel resection	Histopathology	Outcome
1	Anticoagulation	Laparotomy with resection and anastomosis	Yes	Ischemic bowel disease	Improved
2	Anticoagulation	Laparotomy	No	—	Mortality due to extensive bowel ischemia
3	Anticoagulation phlebotomy	Resection+anastomosis+ileostomy	Yes	Ischemic bowel disease	Improved
4	Anticoagulation	—	No	—	Improved
5	Anticoagulation	MALS release	No	Fibrotic band	Improved
6	Anticoagulation antihypertensives	Resection+anastomosis	Yes	Vasculitis with ischemic enteritis	Improved with Steroids

MALS: Median arcuate ligament syndrome

(SMA) thrombosis on a background of celiac axis stenosis, consistent with acute-on-chronic mesenteric ischemia. CT angiography demonstrated SMA thrombosis and celiac stenosis (Figures 1–3), while laparotomy and histopathology confirmed ischemic bowel disease (Figures 4 and 5).

Case 2, previously treated as acid peptic disease for non-specific symptoms, demonstrated diffuse bowel ischemia involving both SMA and inferior mesenteric artery (IMA) territories with multivessel atherosclerotic disease and superior mesenteric venous thrombosis (Figure 6). This patient had extensive bowel ischemia and represented the only mortality in the series.

Case 3 presented acutely without antecedent chronic symptoms and was diagnosed with primary IMA thrombosis associated with significant aortic and common iliac artery calcific disease. CT angiography showed IMA thrombosis in coronal and sagittal sections with associated aortic calcifications (Figures 7–9).

Case 4 initially mimicked pancreatitis because of overlapping symptoms but was subsequently diagnosed with mesenteric venous ischemia. CT imaging demonstrated superior mesenteric, portal, and splenic vein thrombosis with bowel wall thickening and comb sign (Figure 10).

Case 5 had chronic postprandial abdominal pain previously treated as acid peptic disease and was found to have celiac axis compression due to median arcuate ligament syndrome (MALS) with associated proximal SMA thrombosis. CT findings are demonstrated in Figures 11 and 12.

Case 6 had chronic abdominal pain with underlying vasculitis and presented with celiac artery dissection, intimal flap, and SMA occlusion, representing vasculitis-associated arterial AMI. CT angiographic findings are illustrated in Figures 13 and 14.

Overall clinical presentation, diagnostic delay patterns, and triggers for acute deterioration are detailed in Table 2. CT angiographic findings, vascular etiologies, bowel findings, and final AMI patterns are summarized in Table 3.

Arterial etiologies predominated in five patients (83.3%), while one patient (16.7%) had isolated venous AMI. Five patients (83.3%) required surgical intervention, including bowel resection in three patients (50%), while one patient was managed conservatively with anticoagulation alone. Management strategies, operative details, histopathology, and outcomes are summarized in Table 4.

Diagnostic delay was associated with progression from chronic mesenteric ischemia to acute-on-chronic

bowel ischemia, increased surgical burden, and adverse outcomes. One patient (16.7%) died due to extensive bowel ischemia, whereas the remaining patients improved with individualized surgical or medical management. Patients with prior chronic symptoms required more frequent surgical intervention than those without antecedent symptoms.

DISCUSSION

AMI remains a life-threatening vascular emergency with persistently high morbidity and mortality, largely attributable to delayed diagnosis and late presentation with bowel necrosis. Increasing evidence suggests that many cases represent the terminal manifestation of previously unrecognized CMI rather than a purely acute event.^[5]

In the present series, 66.7% of patients had chronic post-prandial abdominal pain previously treated as APD, resulting in significant diagnostic delay. Similar patterns have been reported in literature, where CMI is frequently misdiagnosed due to non-specific gastrointestinal symptoms overlapping with benign conditions, such as dyspepsia and peptic disease (Yeoh *et al.*). The Society for Vascular Surgery guidelines also emphasize that CMI is often under-recognized, particularly in patients with vascular risk factors.

A key clinical observation in this study was that all patients presented with severe abdominal pain out of proportion to physical examination. This classic clinical sign represents early intestinal ischemia before peritoneal involvement and remains one of the most important early diagnostic clues. Despite being well described, this feature is frequently overlooked in clinical practice, contributing to delayed diagnosis. The present findings reinforce the clinical principle that mesenteric ischemia must be suspected in any patient presenting with unexplained severe abdominal pain disproportionate to examination.

Progression from CMI to acute-on-chronic ischemia is well documented.^[6] Patients with underlying mesenteric arterial stenosis may remain asymptomatic due to collateral circulation until an acute thrombotic event results in catastrophic ischemia. The World Society of Emergency Surgery guidelines note that acute-on-chronic presentations are common and are associated with delayed diagnosis and poor outcomes. In this series, delayed diagnosis was associated with advanced disease, higher surgical requirement, and mortality, consistent with previous studies demonstrating that delayed recognition significantly increases bowel necrosis and mortality.^[7]

CT angiography remains the cornerstone of diagnosis, enabling rapid identification of arterial and venous pathology, bowel viability, and etiological classification.^[8] In this series, CT angiography successfully identified diverse etiologies, including atherosclerotic occlusion, mesenteric venous thrombosis, vasculitis, and MALS, allowing etiology-directed management. Similar diagnostic accuracy of CT angiography has been reported in systematic reviews by Cudnik *et al.*

The surgical intervention rate in this study was 83.3%, comparable to published data, where late-presenting AMI frequently requires operative management. The observed mortality rate of 16.7% aligns with literature reporting mortality ranging from 20–60%, particularly in cases with delayed diagnosis and extensive ischemia.

Limitations

This study is limited by a small sample size, a single-center design, a lack of long-term follow-up, and descriptive analysis without statistical correlation.

CONCLUSION

AMI frequently represents progression of previously unrecognized CMI and is often preceded by misdiagnosis

as APD. Abdominal pain out of proportion to physical examination is a critical early warning sign, and mesenteric ischemia must remain an important differential diagnosis until proven otherwise. Early suspicion and prompt CT angiography are essential to reduce bowel necrosis, surgical burden, and mortality.

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