CoMPHI Journal: Community Medicine and Public Health of Indonesia Journal
Vol. 6, No. 2, Bulan October Tahun 2025, hlm. 81-87

e-ISSN 2722-8169
p-ISSN 2723-097X

Acute Mesenteric Ischemia in a 68-Year-Old Woman Presenting with Abdominal Pain: A Case Report

Rico Alfredo Hutabarat[1*], Suryo Wahyu Raharjo[2]

[1]Resident of Surgery, Faculty of Medicine, Sebelas Maret University, Dr. Moewardi Hospital, Surakarta, Indonesia
[2]Consultant of Digestive Surgery, Department of Surgery, Sub Division of Digestive Surgery

Article History:
Received: 2025-04-08
Revised: 2025-05-21
Accepted: 2025-07-15
Publish: 2025-10-31

Key words:
Acute Mesenteric Ischemia, Abdominal Pain, Elderly Patient, Exploratory Laparotomy, Vascular Thrombosis

Author correspondence:
Correspondence of the author:
Name: Rico Alfredo Hutabarat, Suryo Wahyu Raharjo
Institution: Department of Surgery, RSUD Dr. Moewardi, Faculty of Medicine, Sebelas Maret University
Address: Jl. Kolonel Sutarto No.132, Jebres, Kec. Jebres, Kota Surakarta, Jawa Tengah 57126
Email:ricoalfredohutabarat@gmail.com

ABSTRACT

Acute Mesenteric Ischemia (AMI) is a life-threatening condition caused by a sudden reduction in intestinal blood flow, leading to ischemia and potential bowel necrosis. With a mortality rate of 50–80%, delayed diagnosis due to nonspecific symptoms remains a challenge. The primary causes include arterial embolism, thrombosis, non-occlusive mesenteric ischemia (NOMI), and mesenteric venous thrombosis (MVT). Elderly patients, especially those with cardiovascular disease, are at higher risk. Contrast-enhanced CT angiography (CTA) is the gold standard for diagnosis. A 68-year-old woman presented with a three-day history of abdominal pain and was initially diagnosed with acute abdominal pain due to suspected perforated appendicitis. Imaging showed abdomen without. pneumoperitoneum, along with chest radiograph found cardiomegaly and aortic elongation. Exploratory laparotomy was performed on February 15, 2025, revealed multiple mesenteric hematomas indicative of AMI and a hyperemic appendix, leading to an appendectomy. Postoperative care included anticoagulation, antibiotics, and supportive therapy. MSCT confirmed mesenteric ischemia with vascular stenosis and thrombi. On February 20, she developed heparin-induced hematochezia, managed with transfusion and hemostatic therapy. The patient remained stable and was discharged on February 24, 2025'. This case illustrates the diagnostic challenges of AMI, often misdiagnosed due to its nonspecific symptoms. Exploratory laparotomy played a crucial role in diagnosis, revealing mesenteric hematomas. Contrast-enhanced MSCT confirmed vascular involvement, highlighting the importance of imaging in AMI detection. Anticoagulation was essential for preventing further thrombosis but required careful monitoring due to the risk of bleeding complications.Early recognition and intervention are vital in managing AMI, especially in elderly patients with cardiovascular risk factors. A multidisciplinary approach, including surgical exploration, advanced imaging, and individualized anticoagulation therapy, is crucial for improving outcomes.

Introduction

Acute Mesenteric Ischemia (AMI) is a medical emergency characterized by a sudden reduction in intestinal blood flow, leading to ischemia and potential bowel necrosis if not promptly diagnosed and managed.[1] Although it is a relatively rare cause of acute abdomen, AMI carries a high mortality rate, ranging from 50% to 80%, particularly when diagnosis and treatment are delayed.[2] The condition is often underrecognized due to its nonspecific clinical presentation, which can mimic other gastrointestinal disorders such as gastroenteritis, peptic ulcer disease, or acute pancreatitis.[3]

The etiology of AMI is broadly classified into four types: (1) arterial embolism (most commonly from cardiac sources, such as atrial fibrillation), (2) arterial thrombosis (usually associated with atherosclerosis), (3) non-occlusive mesenteric ischemia (NOMI, often due to low-flow states like heart failure or sepsis), and

e-ISSN 2722-8169
p-ISSN 2723-097X

(4) mesenteric venous thrombosis (MVT, associated with hypercoagulable states).[4] Among these, arterial embolism and thrombosis are the leading causes, accounting for nearly 60–70% of cases.[5]

Several risk factors predispose patients to AMI, with advanced age being one of the most significant.[6] Elderly individuals, particularly those over 60 years old, are at increased risk due to the higher prevalence of cardiovascular disease, atherosclerosis, atrial fibrillation, and other comorbidities that impair mesenteric circulation.[7] Additionally, aging is associated with diminished vascular elasticity and endothelial dysfunction, further exacerbating susceptibility to ischemic events.[8]

Sex-related differences in AMI incidence have also been observed. While some studies suggest a slight male predominance, others indicate that postmenopausal women may have an increased risk due to hormonal changes affecting vascular function.[9] Estrogen is known to exert a protective effect on endothelial health and blood flow regulation; therefore, its decline after menopause may contribute to increased vascular stiffness and a prothrombotic state.[10] Furthermore, women may experience atypical presentations, leading to delayed diagnosis and worse clinical outcomes.[11]

Early diagnosis of AMI remains challenging due to its insidious onset and nonspecific symptoms, including abdominal pain, nausea, vomiting, and diarrhea.[12] The classic triad of AMI—sudden severe abdominal pain, absence of peritoneal signs in the early phase, and underlying cardiovascular disease—is present in only a minority of cases.[13] Laboratory markers such as elevated lactate levels and metabolic acidosis can aid in diagnosis, but imaging modalities, particularly contrast-enhanced computed tomography angiography (CTA), are the gold standard for confirming AMI and determining its severity.[14]

In this report, we present a case of a 68-year-old woman who developed acute abdominal pain due to AMI. This case highlights the critical role of early recognition, rapid diagnostic imaging, and timely intervention in optimizing patient outcomes.

Case Description

A 68-year-old woman presented to the emergency department on February 14, 2025, referred from Kustati Hospital, complaining of abdominal pain lasting for three days prior to admission. The pain was intermittent and gradually increased, and the patient reported normal bowel movements and passage of flatus. On examination, her general condition was moderate, and she was fully conscious. Abdominal examination revealed diffuse tenderness on the abdomen without muscular rigidity, tympanic percussion sounds, and bowel sounds were present. Based on clinical findings, generalized peritonitis due to suspected perforated appendicitis was diagnosed. Initial management included intravenous fluids (NaCl 1500cc/24 hours), analgesics (Metamizole 1g/8 hours), gastric protection (Ranitidine 50mg/12 hours), and a plan for an exploratory laparotomy.

Imaging studies were performed on February 14, 2025, revealing a chest X-ray that showed left-sided pneumonia, cardiomegaly, mediastinal widening suggestive of aortic elongation, right hemidiaphragm elevation, and pleural plaques at the level of VTh 4-5. An abdominal X-ray showed partially obscured peritoneal fat lines, suggestive of peritonitis, but no evidence of pneumoperitoneum or ileus. The findings on the abdominal X-ray from February 14, 2025, were as follows: pre-peritoneal fat line partially obscured, suggesting peritonitis; no signs of pneumoperitoneum or ileus; meteorismus (abdominal distension); spondylosis lumbalis (degenerative changes in the lumbar spine); old fractures of the 7th and 8th right ribs with callus formation; and a gastric tube with its tip projected into the stomach.

e-ISSN 2722-8169
p-ISSN 2723-097X

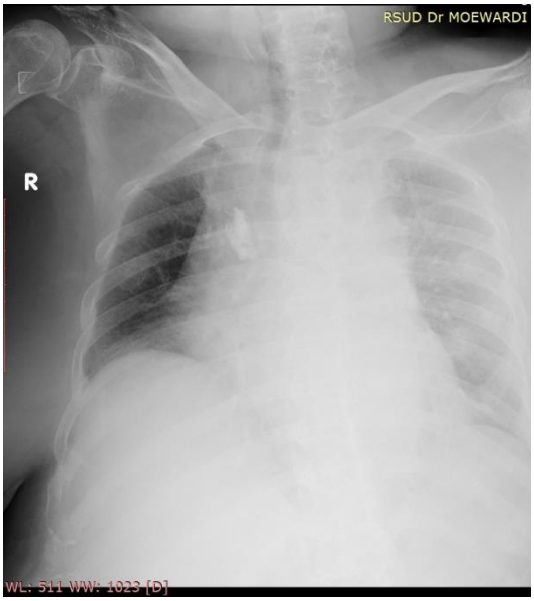
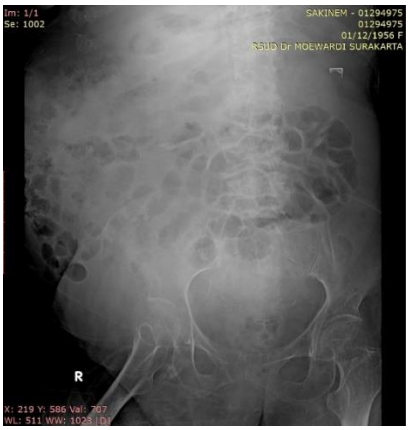
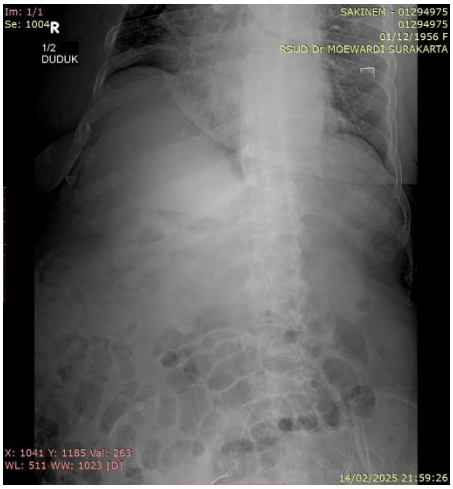


Figure 1. Chest X-ray





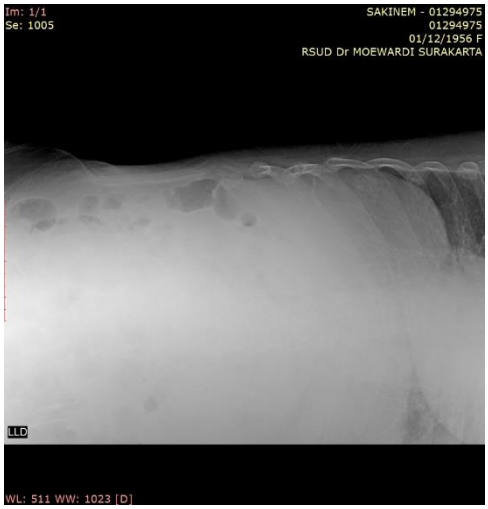


Figure 2. Abdominal X-ray in three positions

On February 15, 2025, an exploratory laparotomy with appendectomy was performed under general anesthesia. A midline incision was made, and upon entering the peritoneal cavity, an intact stomach, liver, spleen, and intestines up to the rectum were observed. However, multiple hematomas were noted in the mesentery, confirming the presence multiple hematomas on the mesenterium. Additionally, the appendix appeared dilated and hyperemic. The surgical team proceeded with an appendectomy, and the specimen was sent for histopathological examination. The abdominal cavity was thoroughly irrigated, and the surgical site was closed in layers. Postoperatively, the patient received heparinization (2500 IU/24 hours), intravenous fluids (RL 500cc/8 hours), antibiotics (Ampicillin 1g/8 hours), analgesics (Metamizole 1g/8 hours), and gastric protection (Omeprazole 40mg/12 hours) and performed Abdominal CT Angiography.

e-ISSN 2722-8169
p-ISSN 2723-097X

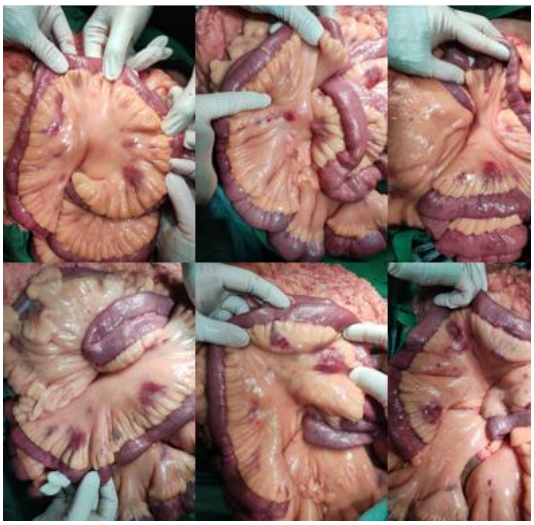


Figure 3. Multiple hematomas in the mesentery

On February 17, 2025, an Abdominal CT Angiography with contrast was performed, revealing a fluid-density lesion with calcifications in the mesentery of the right iliac region, suggestive of mesenteric ischemia. Additionally, partial stenosis at the origin of the inferior mesenteric artery, mural thrombus in the abdominal aorta and iliac arteries, and multiple para-aortic reactive lymphadenopathies were noted. Other findings included fatty liver, multiple renal and splenic cysts, minimal bilateral pleural effusion, degenerative spine disease, and old rib fractures. The patient was initially managed in the ICU for one day and was transferred to the general ward on February 16, 2025. However, on February 20, 2025, she developed fresh blood per rectum (hematochezia). Laboratory investigations revealed anemia due to bleeding, with a hemoglobin level of 9.6 g/dL, hematocrit 29%, leukocyte count of 14.7 × 10^3/µL, platelet count of 268 × 10^3/µL, and erythrocyte count of 2.91 × 10^6/µL.

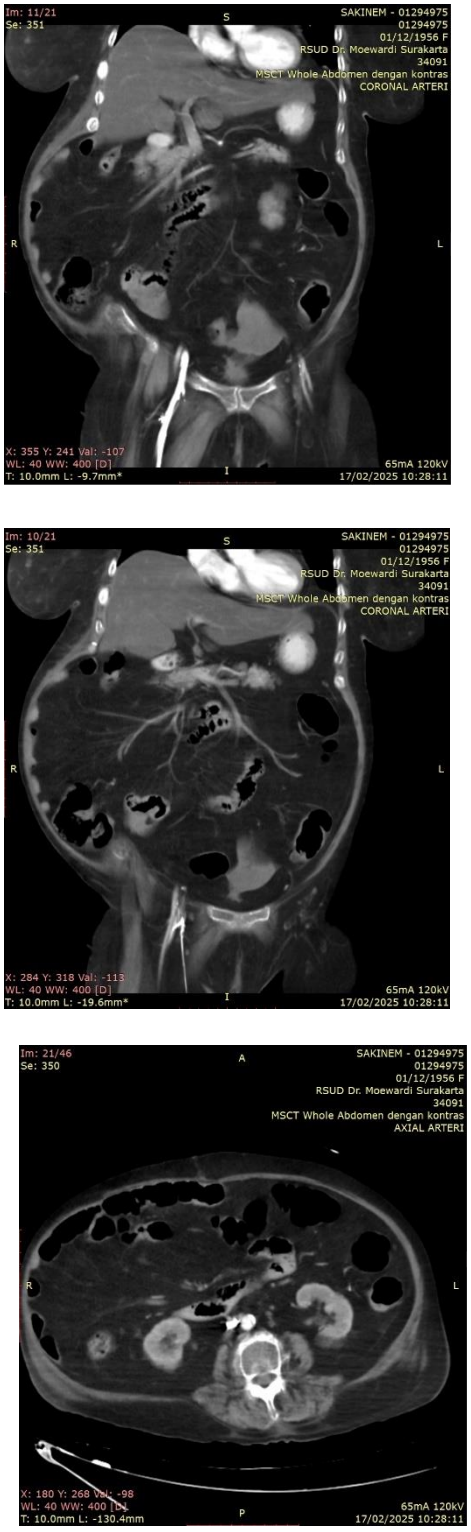


Figure 4. Abdominal CT Angiography

The internal medicine team diagnosed the patient with abdominal pain due to AMI, partial stenosis of the inferior mesenteric artery, mural thrombus in the abdominal aorta and iliac arteries, heparin-induced hematochezia (resolved), fatty liver, post-laparotomy

e-ISSN 2722-8169
p-ISSN 2723-097X

appendectomy, and anemia due to bleeding. Management included transfusion of one unit of PRC, Vitamin K injection (1 amp/8 hours), Tranexamic acid (500mg as needed for bleeding), Curcuma supplement (3×1), and continuation of heparinization only if no further bleeding occurred for over 24 hours. The patient was closely monitored for signs of bleeding post-transfusion. Histopathological examination of the appendix confirmed chronic appendicitis, with fibrosis in the submucosa and dilated blood vessels in the serosa but no evidence of acute inflammation or malignancy.

The patient's condition remained stable throughout hospitalization, and she showed progressive clinical improvement. On February 24, 2025, she was discharged in stable condition with a follow-up plan for further outpatient monitoring .

Discussion

Acute Mesenteric Ischemia (AMI) is a life-threatening condition requiring early recognition and prompt management to prevent irreversible intestinal damage and high mortality rates.[15] This case of a 68-year-old woman with AMI underscores the diagnostic challenges and critical interventions necessary to optimize patient outcomes.

The patient initially presented with generalized abdominal pain, leading to a preliminary diagnosis of perforated appendicitis based on clinical findings. The non-specific nature of AMI symptoms often results in misdiagnosis, as seen in this case. The absence of classic peritoneal signs in the early phase further complicated timely recognition of AMI.[16] The patient's advanced age and cardiovascular comorbidities, including cardiomegaly and aortic elongation, likely contributed to the development of AMI, aligning with established risk factors such as atherosclerosis and arterial thrombosis.

Imaging played a pivotal role in confirming the diagnosis.[17] The initial abdominal X-ray findings were non-specific, failing to provide definitive evidence of AMI. However, MSCT Whole Abdomen with contrast conducted later revealed crucial findings, including fluid-density lesions with calcifications in the mesentery, stenosis at the origin of the inferior mesenteric artery, and mural thrombus in major arteries. This highlights the importance of contrast-enhanced imaging in AMI, which allows for a more accurate assessment of vascular compromise and potential thrombotic events.[14]

Exploratory laparotomy revealed multiple mesenteric hematomas, confirming the presence of AMI. The co-existence of chronic appendicitis, as confirmed by histopathological examination, further complicated the clinical picture. The dilated and hyperemic appendix observed intraoperatively may have contributed to the initial misdiagnosis. Despite the diagnostic ambiguity, the surgical approach, including appendectomy and peritoneal irrigation, was effective in managing the patient's condition.[4]

Postoperatively, the patient received standard AMI management, including heparinization to prevent further thrombotic events. However, anticoagulation therapy posed a significant bleeding risk, as evidenced by hematochezia on postoperative day five. This necessitated a careful balance between preventing thrombotic complications and managing bleeding risks. Temporary discontinuation of heparinization, along with blood transfusion and administration of hemostatic agents such as Vitamin K and Tranexamic acid, proved effective in stabilizing the patient's condition.

The patient's favorable outcome was attributed to timely surgical intervention and vigilant postoperative monitoring. Despite the complexities associated with AMI management, early detection via imaging, appropriate surgical exploration, and individualized anticoagulation strategies significantly contributed to her recovery.[11] This case underscores the need for a

e-ISSN 2722-8169
p-ISSN 2723-097X

high index of suspicion for AMI in elderly patients presenting with acute abdominal pain, particularly those with underlying cardiovascular disease and risk factors for arterial thrombosis.

Conclusion

This case highlights the complexity of diagnosing and managing acute mesenteric ischemia (AMI) in elderly patients. The initial presentation mimicked acute appendicitis with peritonitis, necessitating an exploratory laparotomy, which subsequently revealed mesenteric hematomas suggestive of AMI. Further imaging and clinical correlation confirmed vascular pathology involving the inferior mesenteric artery and abdominal aorta. This case emphasizes the importance of considering AMI in elderly patients with unexplained abdominal pain and risk factors such as atherosclerosis and thrombosis. Early recognition and intervention, including surgical exploration and anticoagulation therapy, are crucial in improving patient outcomes. The patient was managed successfully with a multidisciplinary approach, and her condition remained stable, allowing for discharge on February 24, 2025.

Acknowledgments

The author would like to express his deepest gratitude to the various parties who have played a role in the creation of this article, both in helping, facilitating, guiding, providing suggestions, and providing great motivation in completing this research.

References

1. Sakamoto, T., Kubota, T., Funakoshi, H. & Lefor, A. K. Multidisciplinary management of acute mesenteric ischemia: Surgery and endovascular intervention. World J. Gastrointest. Surg. 13, 806–813 (2021).
2. Yu, H. & Kirkpatrick, I. D. C. An Update on Acute Mesenteric Ischemia. Can. Assoc. Radiol. J. 74, 160–171 (2023).
3. Serban, D. et al. Acute Mesenteric Ischemia in COVID-19 Patients. J. Clin. Med. 11, 200 (2022).
4. Martini, V. et al. Clinical characteristics and outcome of patients with acute mesenteric ischemia: a retrospective cohort analysis. Langenbecks Arch. Surg. 407, 1225–1232 (2022).
5. Chen, C., Li, Y.-W., Shi, P.-F. & Qian, S.-X. Acute Mesenteric Ischemia in Patients with COVID-19: Review of the literature. J. Natl. Med. Assoc. 114, 47–55 (2022).
6. Singh, B. & Kaur, P. COVID-19 and acute mesenteric ischemia: A review of literature. Hematol. Transfus. Cell Ther. 43, 112–116 (2021).
7. Sumbal, R., Ali Baig, M. M. & Sumbal, A. Predictors of Mortality in Acute Mesenteric Ischemia: A Systematic Review and Meta-Analysis. J. Surg. Res. 275, 72–86 (2022).
8. Kärkkäinen, J. M. Acute Mesenteric Ischemia: A Challenge for the Acute Care Surgeon. Scand. J. Surg. 110, 150–158 (2021).
9. Piton, G. et al. Factors associated with acute mesenteric ischemia among critically ill ventilated patients with shock: a post hoc analysis of the NUTRIREA2 trial. Intensive Care Med. 48, 458–466 (2022).
10. Matkovic, Z. & Aleksic, Z. Medical, Surgical and Experimental Approaches to Acute Mesenteric Ischemia and Reperfusion. Mater. Socio-Medica 36, 77–81 (2024).
11. Demetriades, D. Acute mesenteric ischemia: diagnostic and therapeutic challenges. Eur. J. Trauma Emerg. Surg. 49, 1997–1998 (2023).
12. Molyneux, K., Beck-Esmay, J., Koyfman, A. & Long, B. High risk and low prevalence diseases: Mesenteric ischemia. Am. J. Emerg. Med. 65, 154–161 (2023).
13. Nuzzo, A. et al. Improving clinical suspicion of acute mesenteric ischemia among patients with acute abdomen: a cross-sectional study from an intestinal stroke center. World J. Emerg. Surg. 18, 37 (2023).
14. Bala, M. et al. Acute mesenteric ischemia: updated guidelines of the World Society of Emergency Surgery. World J. Emerg. Surg. 17, 54 (2022).

e-ISSN 2722-8169
p-ISSN 2723-097X

15. Hou, L., Wang, T., Wang, J., Zhao, J. & Yuan, D. Outcomes of different acute mesenteric ischemia therapies in the last 20 years: A meta-analysis and systematic review. Vascular 30, 669–680 (2022).
16. Zeng, Y. et al. Radiological predictive factors of transmural intestinal necrosis in acute mesenteric ischemia: systematic review and meta-analysis. Eur. Radiol. 33, 2792–2799 (2023).
17. Zafirovski, A., Zafirovska, M., Kuhelj, D. & Pintar, T. The Impact of Biomarkers on the Early Detection of Acute Mesenteric Ischemia. Biomedicines 12, 85 (2024).