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Acute mesenteric infarction presenting with portomesenteric venous gas: a case report

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Abstract: A 72-year-old woman presented to the emergency department with fatigue and epigastric pain. Imaging revealed pneumatosis intestinalis and portomesenteric venous gas (PMVG), ultimately diagnosed as mesenteric infarction. The case highlights PMVG as an urgent radiological sign requiring prompt recognition and surgical consultation in emergency settings.

Keywords: Diagnostic Delay; Emergency; Mesenteric Infarction; Portomesenteric Venous Gas

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1. Introduction

Acute mesenteric ischemia (AMI) is a life-threatening vascular emergency with high mortality. It may result from arterial embolism, arterial thrombosis, mesenteric venous thrombosis, or non-occlusive mesenteric ischemia (NOMI). PMVG is a radiologic sign traditionally associated with bowel infarction but also seen in non-ischemic processes. Understanding the prognostic implications of PMVG is critical for emergency physicians.

2. Case presentation

A 72-year-old woman presented to the ED with fatigue, progressive postprandial epigastric pain, nausea, and intermittent vomiting over three days. She reported anorexia and mild abdominal distension. Past medical history included type II diabetes, hypertension, and ischemic heart disease. Medications included metformin, losartan, and aspirin.

On examination, she appeared mildly distressed. Vitals: heart rate: 134 bpm, blood pressure: 100/60 mmHg, respiratory rate: 20, temperature: 36.8°C. Her abdomen was distended, particularly in the epigastric region, with mild tenderness but no guarding or rebound. Bowel sounds were hypoactive. There was no hepatosplenomegaly.

Due to the patient's clinical deterioration and concern for intra-abdominal pathology, a contrast-enhanced CT abdomen and pelvis was performed despite elevated creatinine. Imaging revealed pneumatosis intestinalis, PMVG, and atherosclerosis at the origin of the superior mesenteric artery. The findings suggested bowel ischemia with likely infarction.

The patient was promptly resuscitated with IV fluids and antibiotics. Within hours, she was taken to the operating room. Exploratory laparotomy revealed extensive bowel necrosis. Given the non-survivable nature of the disease, she was transitioned to comfort care and died on day 10 of hospitalization.

figure 1A Pneumatosis intestinalis

Table 1 Initial laboratory findings

Laboratory study	Result	Normal Range
pH	7.40	7.35 – 7.45
pCO_2 (mmHg)	31.2	35 – 45
HCO_3 (mEq/L)	19.4	22 – 30
Sodium (mEq/L)	129	135 – 145
Potassium (mEq/L)	3.0	3.5 – 5.0
Creatinine (mg/dL)	1.9	0.6 – 1.3
Amylase (U/L)	225	30 – 110
Lipase (U/L)	50	13 – 60
CRP (mg/L)	78	<5
WBC ($\times 10^9$/L)	13.1	4.0 – 11.0
Hemoglobin (g/dL)	12.1	12.0 – 16.0 (F)
Platelets ($\times 10^9$/L)	290	150 – 450
Troponin	Negative	Negative

3. Discussion

AMI often presents nonspecifically, which can delay diagnosis and treatment. PMVG is a rare but critical imaging finding strongly suggestive of bowel necrosis. It results from transmural bowel injury, allowing intraluminal gas to enter the portal venous system. In this case, the delay in seeking care and subtle presentation likely contributed to irreversible bowel infarction.

Emergency physicians must recognize the prognostic importance of PMVG. While not always indicative of infarction, its presence requires rapid evaluation, early CTA, and surgical consultation. According to Lendzion et al., PMVG occurs in 3–14% of AMI cases and correlates strongly with irreversible bowel damage. Cognitive errors such as anchoring and underestimating symptom severity can lead to fatal delays.

Management decisions should be guided by clinical severity, imaging findings, and laboratory markers. CTA remains the most effective tool for diagnosis. This case supports literature findings that PMVG, especially with pneumatosis and systemic compromise, necessitates urgent surgical exploration.

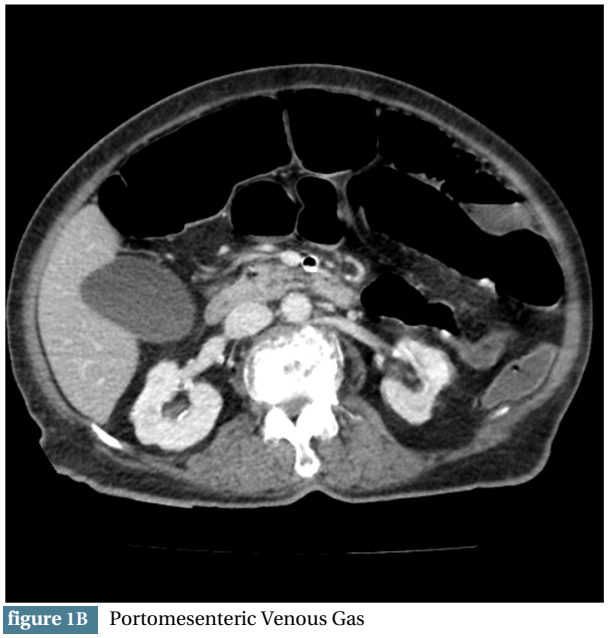

figure 1B Portomesenteric Venous Gas

4. Conclusion

PMVG is an ominous sign of mesenteric infarction. Emergency physicians should prioritize rapid diagnosis and surgical consultation when this finding is present, even if the clinical presentation is subtle.

5. Declarations

5.1. Acknowledgement

None.

5.2. Authors' contribution

All authors contributed to the manuscript equally.

figure 2 Portomesenteric venous gas and pneumatosis intestinalis

5.3. Conflict of interest

None.

5.4. Funding

None.

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