

中文題目：低血容性休克導致非阻塞性腸系膜缺血

英文題目：Non-occlusive mesenteric ischemia precipitated by hypovolemic shock: a case report

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## Abstract

Intestinal ischemia is crucial to make a rapid diagnosis since the fatal consequences if delayed management. We present a case of non-occlusive mesenteric ischemia, precipitated by diarrhea-induced hypovolemic shock.

## Case Presentation

An 84-year-old male with a history of chronic kidney disease and hypertension presented to the emergency department with a high fever up to 39.1°C, vomitus, and watery diarrhea in the past day. Five family members living with him had similar symptoms, and virus infection was suspected clinically. The physical examinations revealed a distended abdomen with hyperactive bowel sound. There were no peritoneal signs. The laboratory tests showed pre-renal acute kidney injury, hyperlactatemia (5.4 mmol/L), and anion gap metabolic acidosis. There were no obviously increased inflammatory markers. The KUB film showed diffused distended small bowel without free air identified.

However, profound shock developed, and thus fluid resuscitation intravenously followed by norepinephrine infusion (0.08 mcg/kg/min) were administrated. Follow-up KUB revealed prominent bowel gas within the dilated small bowel and newly-developing pneumatosis intestinalis. Computed tomography without contrast medium of the abdomen confirmed the pneumatosis intestinalis, superior mesenteric air, and portal venous gas. The patient underwent emergent bowel resection and side-to-side anastomosis. Intraoperatively, pneumatosis intestinalis with ischemic change over 50 centimeters from the Treitz ligament to 150 centimeters from the ileocecal valve was found. There was no evident thrombosis or vascular change in the pathological exam. Non-occlusive mesenteric ischemia was diagnosed. Unfortunately, the patient died from a secondary infection on day 41 of hospitalization.

## Discussion

Intestinal ischemia can be caused by intestinal blood flow decrease. It is crucial to make a rapid diagnosis since the fatal consequences if delayed management.

The primary etiologies of the intestinal ischemia include mesenteric arterial, venous occlusion, and non-occlusive mesenteric ischemia, such as bowel distention induced hypoperfusion or vasculitis. Non-occlusive mesenteric ischemia (NOMI) accounts for 16% of intestinal ischemia. Risk factors for NOMI included severe cardiovascular disease, chronic renal insufficiency, a condition causing hypoperfusion (heart failure, arrhythmias, sepsis, or hypovolemia), and administration of the vasoconstrictive agent.

The diagnosis of intestinal ischemia can be challenging. Around one-third of elderly patients would developed mental status changes, which makes the diagnosis more difficult. Laboratory findings included leukocytosis, hyperlactatemia, and metabolic acidosis, but all are non-specific. Plain abdominal radiography may be normal in intestinal ischemia, but it helps exclude other causes of abdominal pain (e.g., volvulus). Late findings of intestinal ischemia are distended loops of bowel, pneumatosis intestinalis, and even intraperitoneal air. Abdominal computed tomographic angiography is commonly used to confirm the

diagnosis.

In this case report, we present a case of non-occlusive mesenteric ischemia. The patient with chronic kidney disease had diarrhea-induced hypovolemia and received a vasoconstrictive agent, which led to unfavorable consequences. Non-occlusive mesenteric ischemia (NOMI) should be kept in mind in patients with risk factors. Meanwhile, pneumatosis intestinalis on plain film is an important finding of acute abdomen, and clinicians should be alert.