

An unexpected cause of constipation and abdominal distension in COPD

M. De Smet^{1,2}, E. Derom^{1,2}, G. Joos^{1,2}

(1) Department of Respiratory Medicine, Ghent University Hospital, Ghent, Belgium; (2) Department of Internal Medicine and Pediatrics, Ghent University, Ghent, Belgium.

Question

A 62-year old man presented to our tertiary care hospital for a second opinion regarding end stage COPD GOLD 4D. He had a medical history of former alcohol use complicated by liver steatosis and former smoking. Upon admission the patient complained of constipation and abdominal distension. Physical examination showed diffuse hypertympanic percussion and diffuse abdominal pain upon palpation without signs of peritoneal irritation. CRP, hemoglobin, lactate, liver enzymes, and serum creatinine were within limits of normal. Abdominal radiography showed dilatation of the colon transversum with intramural and intra-abdominal free air (Figure 1). Contrast-enhanced abdominal CT showed extensive intramural air in the right hemicolon (Figure 2). Asso-

biotic therapy resulted in resolution of the clinical symptoms.

PI is a rare (3/10 000) condition characterized by the presence of gas in the intestinal wall. PI may be idiopathic (15%) or secondary to other conditions (85%), summarized in Table 1. Note that PI is not always associated with mesenteric ischemia or an acute surgical condition, but also with inflammatory bowel disease, infectious enterocolitis, lung disease, malnutrition, malignancy, chemotherapy or immune suppression (Table 1). The pathophysiology is incompletely understood, with mechanical, bacterial, and biochemical factors contributing to PI (1-3). In lung disease, PI may be caused by alveolar rupture with air tracking along blood vessels from the mediastinum to the mesenteric root and intestinal wall (1-3). Current imaging findings

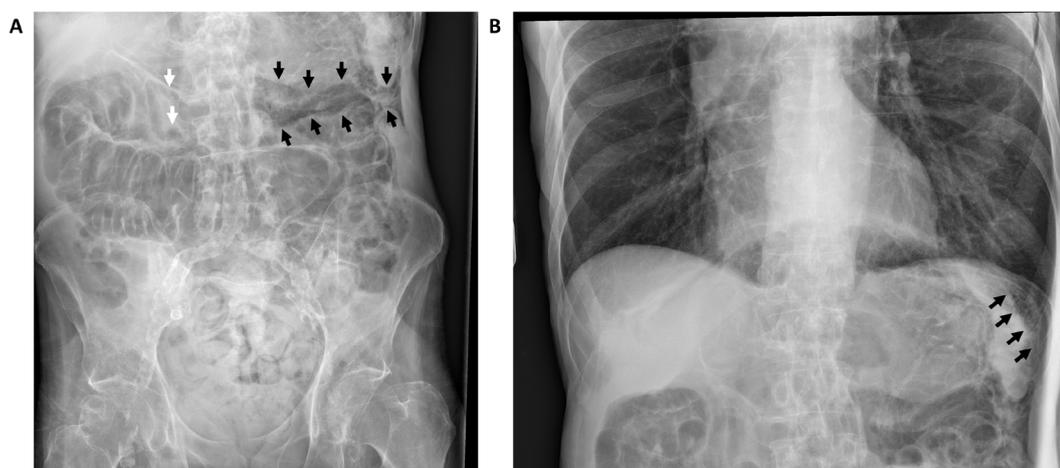


Figure 1. — (A) and (B) Upright abdominal radiograph in panel A with subdiaphragmatic detail in panel B. Note the distended colon transversum, loaded with air. White arrows indicate intramural air. Black arrows indicate pneumoperitoneum.

ciated findings were a pneumoperitoneum and discrete amounts of air in the mesenteric veins and root (Figure 2). No other significant intra-abdominal abnormalities were present.

What is the diagnosis?

Answer

The findings are consistent with pneumatosis intestinalis (PI). Conservative management with oxygen, triple bronchodilator therapy, fasting, laxation and anti-

support this theory. Most patients are asymptomatic. Symptoms may be related to PI, underlying disorder or complications. Complications occur in 3% and include obstruction, volvulus, intussusception and bleeding. PI

Correspondence to: Prof. Dr. Guy Joos, Department of Respiratory Medicine, Ghent University Hospital, Corneel Heymanslaan 10, 9000 Ghent, Belgium. Tel: +32 9 332 26 11. Email: Guy.Joos@uzgent.be

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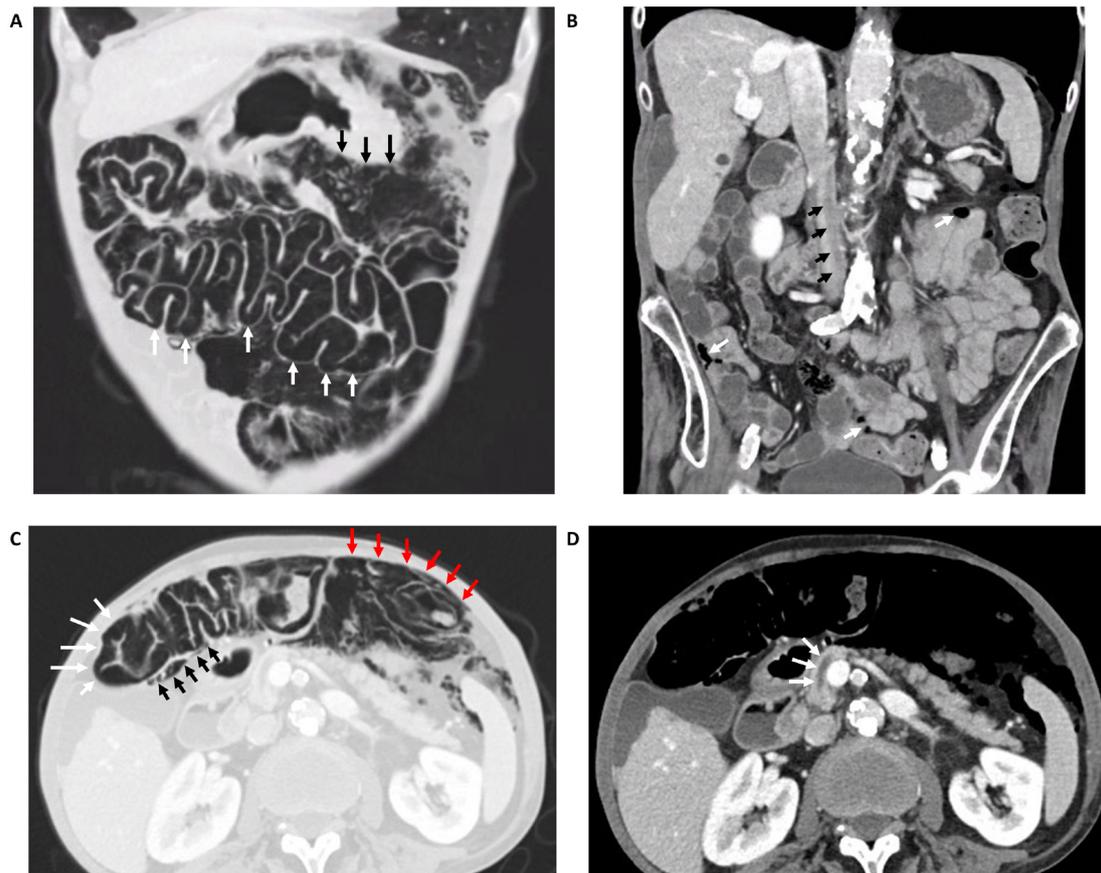


Figure. 2. — Contrast-enhanced computed tomography. (A) Lung windowed coronal section showing intramural air in the colon transversum (white arrows) and associated air in the mesenteric root and pneumoperitoneum (black arrows). (B) Soft tissue windowed coronal section showing air-filled intestinal cysts (white arrows) and air in mesenteric vein (black arrows). (C) Lung windowed axial section showing intramural air in the colon transversum (white arrows) and associated air in the mesenteric root (black arrows) and pneumoperitoneum (red arrows). (D) Soft tissue windowed axial section showing air in the mesenteric vein (white arrows).

can be detected with radiography or endoscopy. CT scan establishes the diagnosis, etiology and complications. Treatment includes dietary measures, antibiotics and oxygen. Complications and specific causes are surgically treated. PI mortality is 5-60% depending on the underlying cause (1-3).

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Written informed consent was obtained from the patient for publication of the details of their medical case and accompanying images.

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Table 1. — Conditions associated with pneumatosis intestinalis, adapted from (1-3)

Acute abdomen	Gastro-intestinal endoscopic procedures
Intestinal ischemia/infarction	Impaired gastro-intestinal motility
Intestinal perforation	Diabetes mellitus
Intestinal obstruction	Connective tissue disease
Abdominal trauma	Hirschprung's disease
Post-surgery	Pyloric stenosis/obstruction
Mucosal disruption	Intestinal pseudo-obstruction
Peptic ulcers	Hypertension
Inflammatory bowel disease	Impaired immune system
Feeding tube	AIDS
Caustic ingestion	Steroids/DMARDS
Infectious	Chemotherapy/immunotherapy
Viral/bacterial enterocolitis	Stem cell transplantation
Clostridium difficile	Organ transplantation
Tuberculosis/mycobacterial	Graft versus host disease
Whipple's disease	Solid tissue tumors
COVID-19	Hematological malignancy
Lung disease	Malnutrition
COPD	
Asthma	
Cystic fibrosis	
Barotrauma: mechanical ventilation, ...	