

A liver with a highly abnormal appearance

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DESCRIPTION

A 33-year-old man with Crohn's disease presented with 3 days of abdominal pain, bloody diarrhoea and vomiting. He was clinically stable and blood tests showed an isolated C reactive protein of 81. Ultrasound (US) scan showed a small air and fluid collection in the right iliac fossa and a highly abnormal liver architecture. An abdominal CT scan was performed (figures 1 and 2).

This showed air within the portal venous system (hepatic portal venous gas, HPVG), tracking up the superior mesenteric vein from a distal ileal mass.

In HPVG the characteristic gas pattern extends to within 2 cm of the liver capsule, due to centrifugal blood flow,¹ distinguishing it from pneumobilia, where the centripetal biliary flow results in gas collecting centrally. It is usually diagnosed on CT or US scan, although can occasionally be seen on plain film.

Causes include intestinal necrosis (43–70%), gastrointestinal dilation (9–12%), gastrointestinal inflammation (8–16%), sepsis (7–11%) and peptic-ulcer disease (4%).² The mechanism is either (1) increased intraluminal pressure and mucosal damage, allowing gas to migrate into mural capillaries (as in this case) or (2) gas produced by gas-forming bacteria, either from pyelophlebitis in the portal system or from an abscess.

Although there is some evidence to suggest that HPVG can slow or even arrest portal flow, the finding of HPVG should be considered as a diagnostic clue and the underlying aetiology must be identified and treated. Mortality is quoted as 39%,³ rising to 75% in cases caused by bowel necrosis.



Figure 1 CT scan showing a distal ileal mass, local perforation and air within the venous system.



Figure 2 CT scan showing extensive air within the portal system of the liver to within 2 cm of the capsule.

This patient underwent an open right hemicolectomy and end ileostomy and was discharged 8 days postoperatively.

Learning points

- ▶ Hepatic portal venous gas (HPVG) is distinguished from pneumobilia by peripheral gas distribution, extending to within 2 cm of the liver capsule.
- ▶ Bowel ischaemia is the most common cause with mortality of 75%.
- ▶ HPVG is not a definitive indication for surgery and management should be directed by the cause; however, an early laparotomy is often needed.

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