A rare case for gas in the heart: diagnosis and treatment
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A 51-year-old patient with newly diagnosed multiple myeloma was admitted with somnolence, severe abdominal pain, and suspicious of myocardial infarction. Laboratory test results revealed hyperproteinaemia, elevated liver enzymes, impaired renal function, elevated serum lactate, and impaired coagulation tests.

Abdominal ultrasound and echocardiography revealed gas inclusions within the portal and hepatic veins (Panels A and B) and in the right atrium and ventricle (Panel C, see Supplementary data online, Video S1). Computed tomography also revealed gas inclusions in the gastric wall and perigastric veins (arrows in Panel D). Gastrointestinal endoscopy showed mucosal haemorrhages and signs for non-transmural wall ischaemia in the gastric fundus (Panel E).

Plasmapheresis was initiated immediately, because of suspected symptomatic plasma hyperviscosity. After 4 h of treatment, the intravenous gas inclusions were no longer detectable (Panels F and G, see Supplementary data online, Video S1) and abdominal pain abated quickly. Liver enzymes and serum lactate normalized and the patient regained full consciousness within 3 days.

In our case, hyperviscosity syndrome induced an impaired perfusion of the gastric wall. The transient gastric wall ischaemia lead to a penetration of gastrointestinal gas into portal venous system and in the right heart. Plasma hyperviscosity occurs in 2–6% of all patients with multiple myeloma. It often affects cerebral and coronary but may also impair splanchnic perfusion.

Supplementary data are available at European Heart Journal — Cardiovascular Imaging online.