An 82-year-old man was admitted to hospital for management of an acute cerebral infarct. During his rehabilitation he was given antibiotics for pneumonia. After the antibiotic treatment commenced, he developed hypovolaemic shock and fresh rectal bleeding. His haemoglobin level dropped from 102 g/L to 75 g/L. Oesophagastroduodenoscopy found mild gastric erosion. Computed tomography (CT) revealed a distended gallbladder containing hyperdense material, suggestive of either hyperdense sludge or blood (Fig 1a). He responded well to blood transfusion, but biochemical testing showed an elevated serum alkaline phosphatase level (1064 IU/L), so another CT study was arranged. The second CT study revealed air inside the gallbladder and a small area of contrast staining in the gallbladder wall (Fig 1b). His haemoglobin level remained low, so hepatic, coeliac and mesenteric digital subtracted angiography was performed. A hepatic angiogram performed with a 5-F catheter (Cobra 1, Cook, Bloomington, US) demonstrated a pseudoaneurysm arising from a branch of the cystic artery (Figs 2a and 2b), with contrast extravasating into the biliary ductal system (Fig 2c). Embolisation of the cystic artery branch after superselective cannulation with a 2.7-F microcatheter (Progreat, Terumo, Somerset, US) was accomplished with microcoils (two 2 mm/2 cm microcoils [Cook] and three 2 mm/3 mm microcoils [Vortex, Boston Scientific, Cork, Ireland]) and 355-500 µm polyvinyl alcohol microparticles (Ivalon). The post-embolisation angiogram showed complete obliteration of the pseudoaneurysm, while the patency of the hepatic arteries was preserved (Fig 2d). The patient’s condition improved after embolisation.

**Discussion**

A cystic artery pseudoaneurysm is a very rare complication of cholecystitis. To our knowledge, fewer than 20 cases have been reported. Although cholecystitis occurs commonly, mycotic cystic artery pseudoaneurysms are rare. This phenomenon may be explained by the observation that the cystic artery is usually thrombosed during cholecystitis rather than developing focal wall necrosis. Other causes of cystic artery pseudoaneurysms include injury during surgery, vascular disease such as polyarteritis nodosa and a bleeding tendency. Cystic artery pseudoaneurysms are prone to rupture; 45% will bleed into the biliary system and cause haemobilia.

Patients with cystic artery pseudoaneurysms may present with right hypochondral pain, jaundice and gastro-intestinal haemorrhaging, a syndrome...
known as Quinke’s triad. About 40% of these patients are anaemic. An upper endoscopy usually reveals haemobilia, and an ultrasound may show a distended gallbladder with internal echogenicity. A multiphasic contrast-enhanced CT can be used to demonstrate a cystic artery pseudoaneurysm, especially so if a three-dimensional reconstruction technique is used. Digital subtracted angiography allows both confirmation of the diagnosis and therapeutic intervention. Digital subtracted angiography with transcatheter arterial embolisation (TAE) is a useful method for unstable or high-risk patients as it allows an urgent operation to be avoided. The surgeon can elect to perform definitive surgery when the patient’s condition has stabilised. Thrombosis of the cystic artery does not usually lead to ischaemia of the gallbladder because the gallbladder bed blood supply is usually adequate. There have been no reports of gallbladder gangrene after TAE of cystic artery pseudoaneurysms. Nevertheless, because gallbladder gangrene is a potentially life-threatening complication, we consider it essential that patients be closely monitored after the procedure.

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FIG 2. (a) Right hepatic angiogram shows a pseudoaneurysm (arrow). (b) Cystic artery angiogram after selective cannulation with a microcatheter confirms the pseudoaneurysm arising from the cystic artery. (c) Cystic artery angiogram shows contrast extravasating into the biliary system and the duodenum. Filling defects are seen inside the gallbladder, cystic duct and common bile duct (arrows), suggesting blood clots. (d) Post-embolisation right hepatic angiogram shows successful embolisation of the cystic artery pseudoaneurysm. The patency of the right hepatic artery has been preserved

References