artery. There was a partial thrombus within the larger aneurysm, which was also seen to be adherent to the antroduodenal area.

Initially radiological intervention was sought with the view to put a covered stent graft across the aneurysm. However because of the unfavorable anatomy of the distal right hepatic artery and the fact that there was another aneurysm in the left hepatic artery branch,the patient was planned for surgical intervention.

Intra-operatively there was a large aneurysm in the hepatic artery proper extending to the right hepatic artery.The aneurysm had eroded into the first part of duodenum and was found adherent to it. Beyond the aneurysm, the right hepatic artery was found to be attenuated and therefore unsuitable for any anastomosis.

The left gastric artery was anastomosed to the left hepatic artery. Sleeve resection of the first part of duodenum, as part of excision of the eroded pseudoaneurysm was performed along with cholecystectomy. The residual liver abscess cavity was also excised. The aneurysm seen in the left hepatic artery could not be identified intraoperatively and was left untouched.The histological examination of the resected aneurysm confirmed it to be a pseudoaneurysm. The patient was discharged on the 5thpost-operative day without any complications and is currently doing fine after 2 years of follow-up.

Discussion

Hepatic artery pseudoaneurym (HAP) is among the rare causesof UGIB and has been described only as case reports.[1] In the recent past most of the cases have been shown to occur due to increased use ofinterventional procedures of the biliary tract or afterblunt abdominal trauma.Other causes include vasculitis, choledochal cyst, cholecystitis, liver abscess and liver transplantation.[2,3]Gastrointestinal hemorrhage due to erosion of the aneurysm into the biliary tract occurs in nearly 50% ofpatients with rupture of a hepatic artery aneurysm, withone third of patients presenting with the classic triad ofbiliary colic, hemobilia and obstructive jaundice. HAP fistulizing into the duodenum and presenting as upper gastrointestinal bleed has been rarely described.[3,4] We have presented here the first case of HPA resulting from an infective process fistulizing into the duodenum.Our patient had developed HPA as a result of the ongoing infective process (mycotic aneurysm) due to the amebic liver abscess (ALA), which was treated six months back and now presented with UGIB. There are few reports of HPA developing secondary to ALA and presenting with hemobilia.[5-7]In our patient HPA directly eroded into the first part of duodenum thus producing a fistula and leading to bleeding. Mechanisms that have been postulated to explain the development of HAP with a concomitant liver abscess are: bile causing arterial wall injury, lysis of the clot and infection induced endarteritis.

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Spontaneous perforation of bile duct

Introduction

Spontaneous common bile duct (CBD) perforation in adults is a rare clinical event. Acute onset and delay in diagnosis can lead to considerable morbidity. We report here two successfully managed cases of spontaneous CBD perforation. Both presented as acute abdomen with localized bilioma. The diagnosis and management of these patients have been discussed.

Case 1

A 28-year-old-female, diagnosed case of choledocholithiasis, presented with progressively increasing jaundice and acute pain upper abdomen. At laparotomy carried out elsewhere, the surgeon noticed a mass in the subhepatic region extending along the right paracolic gutter to the lumbar area. The gall bladder and common bile duct (CBD) were inaccessible. Hence the surgeon decided to close the abdomen and refer the patient to our centre. On examination, a tender mass was palpable in the right abdomen extending from the right hypochondrium to right lumbar region. Computed tomography(CT) of abdomen showed a fluid collection extending from the bile duct region to the right paracolic gutter (**Figure 1**). Magnetic resonance cholangiopancreatography (MRCP) revealed a CBD stone and a large fluid collection communicating with the CBD at its junction with the cystic duct (**Figure 2**). A diagnosis of spontaneous CBD perforation and bilioma was made. An ultrasound (US) guided percutaneous catheter was placed that drained approx 500 ml of bile initially and 200-300ml bile on subsequent days. An endoscopic retrograde cholangiogram (ERC) was carried out to confirm and manage the leak but failed because the impacted stone did not allow the dye to delineate the proximal duct. Laparotomy performed 6 weeks later revealed

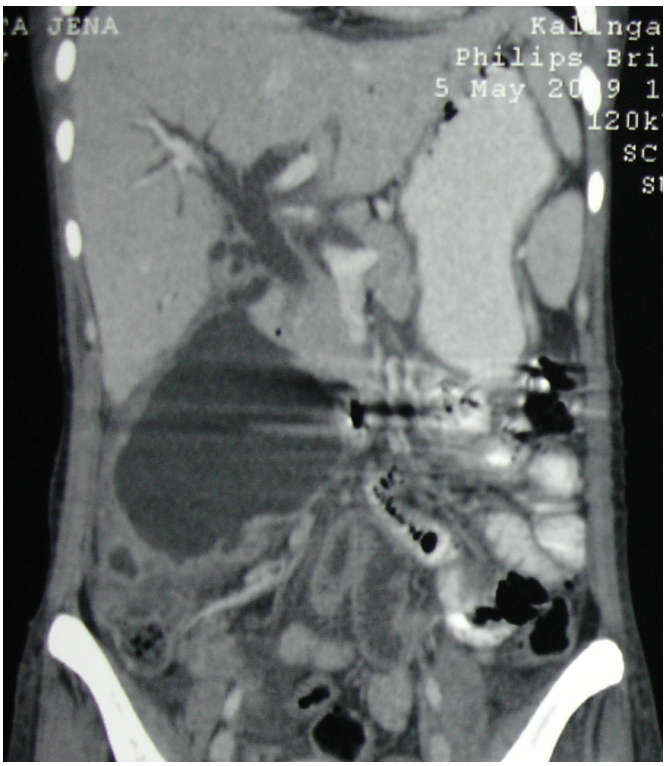

Figure. 1: Coronal reconstruction of contrast enhanced CT scan showing collection extending from the bile duct to right paracolic gutter.

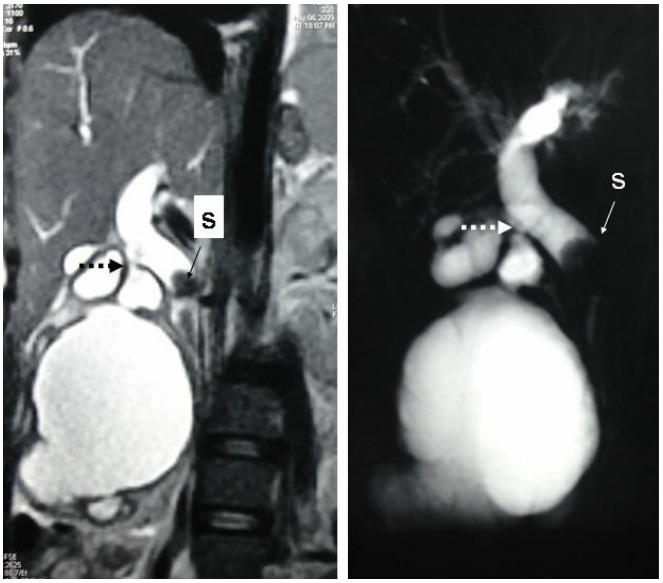

Figure 2: Magnetic Resonance Cholangiogram (MRC) demonstrating a fluid collection communicating with the CBD at its junction with the cystic duct (broken arrow) and a large CBD stone (S).

dense subhepatic adhesions, a contracted gallbladder and a dilated CBD with an impacted stone approximately one cm in diameter. A healed perforation could be demonstrated at the junction of cystic duct and CBD. Cholecystectomy, choledocholithotomy and T-tube drainage was performed after which the patient made an uneventful recovery. She is well after two years of regular follow-up.

Case 2

A 64-year-old-male presented with acute pain abdomen. He had developed jaundice for the last 10 days. On examination the abdomen was tender and rigid on the right side. An ill defined mass was palpable in the right hypochondrium. Ultrasound (USG) abdomen revealed a contracted gall bladder containing stones, a dilated CBD with a large stone distally and fluid collection in the right subhepatic and lumbar areas. A pig-tail catheter inserted under USG guidance drained around 500 ml of bile. MRCP performed three days later suggested bile leak from the CBD at the site of the stone (**Figure 3**). This finding was subsequently confirmed by ERC. A 10Fr, 10cm size plastic stent was placed in the CBD beyond the stone and the site of the leak. The bile leak stopped in 10 days. Two months later the patient was subjected to cholecystectomy, CBD exploration, stone extraction and T-tube drainage. The patient made an uneventful recovery. The T-tube was removed on the 21st day. After a regular follow-up of 18 months the patient is healthy and asymptomatic.

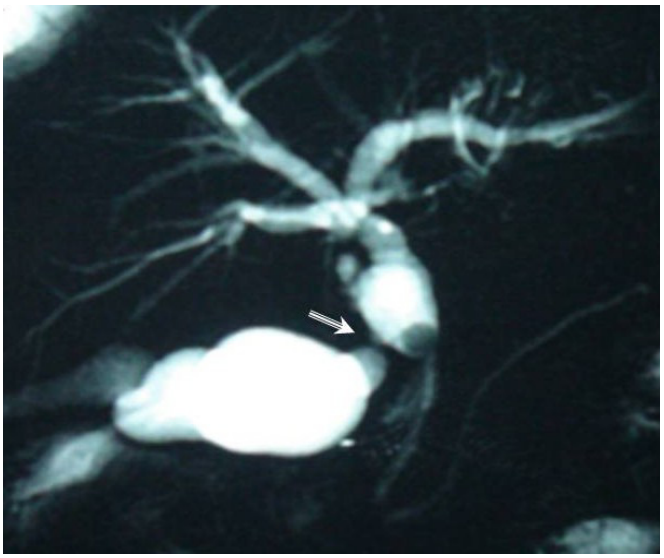

Figure 3: Magnetic Resonance Cholangiogram showing stone in the mid-CBD and the site of perforation (arrow).

Discussion

Spontaneous perforation of the bile duct is a rare clinical event. In infants rupture of choledochalcysts and anomalous union of pancreaticobiliary ductal system (AUPBD)are the commonest etiologies.[1]In adults only 90 cases have been reported so far.[2-4] Though termed spontaneous, most of the cases are associated with choledocholithiasis.[5] Other causes which may occasionally give rise to such events include choledochal cyst,[6] site of previous CBD exploration,[7] choledochoenterostomies,[3] pregnancy,[5] and acalculous cholecystitis.[8]The commonest site of bile duct perforation is at the junction of cystic and common hepatic duct, as was noted in the first case presented here. Developmentally this is a vulnerable site and hence predisposed to perforation consequent to obstruction due to any cause.[9]The large impacted stone distally was the cause of rise in intraductal pressure in the first patient. Pressure necrosis due to the impacted stone was the likely cause of perforation in the second patient.

Bile duct perforation presents as either a localized collection or as generalized biliary peritonitis.[10] Ultrasound is the first modality of investigation. Presence of biliary obstruction and a bilious aspirate from the fluid collection may point to a diagnosis of spontaneous perforation.[11-13] Other modalities used to diagnose this condition are biliary scintigraphy and intraoperative cholangiography.[10,11] Magnetic resonance cholangiography (MRC) has not been utilized as an investigation modality in any of the cases reported so far. Both our cases could be accurately diagnosed on MRC.

ERC failed in the first patient due to the impacted stone. In suitable cases ERC not only helps confirm the diagnosis but also assists in management of the condition. The bile leak in the second patient could be diagnosed using ERC and placement of stent across the obstruction helped in tiding over the critical stage.

Single stage surgery in the form of drainage of bile collection and CBD exploration has been reported.[10]This strategy holds good for unsuspected perforations. In diagnosed cases, staged management helps in converting emergency into an elective situation. In both our patients, USG guided percutaneous catheter drainage of the bile collection and endoscopic drainage of the bile duct in the second patient helped in improving patients' condition. This was followed by definitive elective surgery on a later date with a good final outcome.

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