Bile obstruction in hepatocellular carcinoma — visualization by endoscopic retrograde cholangiography

A case report

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**Summary**

Extrahepatic biliary obstruction is a rare presentation in hepatocellular carcinoma (HCC), only 31 cases having been reported in the literature. We describe a patient with extrahepatic biliary obstruction in whom endoscopic retrograde cholangiography was suggestive of cholangiocarcinoma. Laparotomy and subsequent investigation, however, confirmed HCC metastasizing to the common hepatic duct. The cholangiographic appearance of HCC involving extrahepatic bile ducts is emphasized and features differentiating it from cholangiocarcinoma are highlighted. Even though extrahepatic biliary obstruction in HCC is rare, this disorder should be considered in the differential diagnosis of obstructive biliary tract disease.

Hepatocellular carcinoma (HCC) classically presents with abdominal pain, abdominal swelling and weight loss. Jaundice as the presenting feature is rare, and in the absence of other typical features of HCC may result in erroneous diagnoses. The purpose of this article is to illustrate such a case and review the literature.
Case report

A 49-year-old man was admitted to Baragwanath Hospital for evaluation of jaundice. During the 3 months before admission he noticed progressive yellowing of the eyes, pruritus, pale stools, dark urine and weight loss. There was no history of abdominal pain or swelling and symptoms of chronic pancreatitis or cholecystitis were absent. The patient was a teetotaller. He looked relatively healthy but was deeply jaundiced. There was no rash, lymphadenopathy or evidence of chronic liver disease; the heart and lungs were normal. A firm, smooth, non-tender but enlarged liver was palpable 2 cm below the costal margin and there was questionable enlargement of the gallbladder. Hepatic friction rubs and bruits were absent. No splenomegaly, ascites or abdominal masses could be demonstrated.

Results of laboratory investigations were: haemoglobin 15.4 g/dl; white cell count 7.0 x 10^9/l; serum sodium 142 mmol/l, potassium 4.8 mmol/l, calcium 111 mmol/l; CO\textsubscript{2} 18 mmol/l; urea 3.8 mmol/l; creatinine 59 mmol/l; prothrombin index 195; serum amylase 288 IU/l; conjugated bilirubin 271 μmol/l (normal 0 - 5 μmol/l); unconjugated bilirubin 65 μmol/l (normal 0 - 17 μmol/l); serum alkaline phosphatase 1004 IU/l at 37°C (normal 116 - 283 U/l), aspartate transaminase 96 U/l at 37°C (normal 10 - 38 U/l), alanine transaminase 96 U/l at 37°C (normal 10 - 40 U/l) and γ-glutamyltransferase 83 U/l at 37°C (normal 10 - 50 U/l). Hepatitis B surface antigen and antibody were absent.

Abdominal ultrasound examination detected no abnormalities except for a dilated gallbladder. Endoscopic retrograde cholangiopancreatography showed a markedly dilated common hepatic duct 20 mm in diameter with a large, smooth, fusiform filling defect extending from the terminal portion of the left hepatic duct to the region of the cystic duct (Fig. 1). The gallbladder filled normally and was enlarged. The pancreatic and common bile ducts were normal. A preliminary diagnosis of cholangiocarcinoma was made and the patient underwent surgery. Operative findings included a cirrhotic, bile-stained liver with no macroscopic evidence of malignant disease and a dilated gallbladder and common hepatic duct. Choledochotomy revealed necrotic debris and inspissated bile, which was easily removed using a Fogarty catheter, occluding the lumen of the common hepatic duct. A cholecystectomy was performed and a T-tube inserted. Postoperative T-tube cholangiography showed a normal biliary system with good filling of the duodenum (Fig. 2).

The debris removed from the bile ducts contained tumour tissue comprising clear cells with vesicular nuclei and prominent nucleoli. Mitotic figures were prominent and bile production was noted (Fig. 3). The features were compatible with HCC.
A technetium-99m sulphur colloid liver/spleen scan and computed tomography of the liver performed on the 12th postoperative day disclosed a large lesion in the left lobe of the liver with multiple lesions in the right lobe (Fig. 4). The serum α-fetoprotein level was markedly raised at 131 106 ng/ml (normal 0 - 10 ng/ml), supporting the histological diagnosis. Percutaneous liver biopsy suggested an underlying macronodular cirrhosis. After four courses of chemotherapy with doxorubicin the patient was discharged in a much improved clinical state.

Fig. 4. CT scan of liver shows large, well-defined mass in left lobe (arrows) and multiple smaller defects in right lobe.

Discussion

While HCC is prevalent in sub-Saharan Africa, jaundice as the presenting symptom occurs in only 5% of cases. Mechanisms of HCC-induced cholestasis include diffuse intrahepatic spread of the tumour, compression of bile ducts by porta hepatis lymph nodes or large tumours near the hilum, and obstruction of extrahepatic bile ducts by intraductal tumour spread, haemobilia or necrotic tumour debris originating in the liver.

A review of the English-language literature has identified 31 patients in whom extrahepatic biliary obstruction complicated HCC.7-21 In 17 cases biliary tract occlusion was only appreciated at the time of surgery.7-18 Pre-operative visualization of the biliary system using endoscopic retrograde cholangiography or percutaneous transhepatic cholangiography was performed in 14 patients.15-21 The characteristic cholangiographic appearance is of a large intraluminal filling defect, which may be smooth or irregular. Although most commonly seen in the common hepatic duct, the filling defect may occur anywhere between intrahepatic bile ductules and the ampullary region.15 Of the 22 specified cases, obstruction was partial in 13 and complete in 9. In only 6 of the 14 patients who underwent cholangiography was a correct pre-operative diagnosis suggested.15-21 Alternative diagnoses included cholelithiasis in 2 patients,16,17 extrahepatic cholangiocarcinoma in 3 patients,16,18,21 and extraluminal biliary compression in 1 patient.15 Differentiation of HCC-associated bile duct obstruction from extrahepatic cholangiocarcinoma may be difficult. Cholangiographically, bile duct carcinoma presents in three major forms.22 In 70% of cases a 'rat tail' stricture is seen and in 25% a bulky tumour growing along the long axis of the duct. Polypoid lesions with filling defects on cholangiography are present in only 5% of cases.

At operation blood clot, bile sludge with necrotic tumour debris, or a dark friable tumour cast with the consistency of chicken fat may be found occulting the extrahepatic bile ducts.7 The need for submitting this material for histological examination has been emphasized, since it may contain malignant cells.10,15

Differentiation between HCC and bile duct carcinoma is usually possible on histological grounds. Diagnosis of small amounts of tissue may be complicated by the presence of a pseudoglandular pattern of HCC or solid variant of bile duct carcinoma.23

Serological determination of the α-fetoprotein level has proved to be extremely useful in the diagnosis of HCC. Except for mild elevations in benign hepatic disease and other gastrointestinal tumours, levels greater than 2000 ng/ml are highly suggestive of HCC and may aid in differentiating it from cholangiocarcinoma.24

The advent of direct cholangiography has allowed improved visualization of the biliary system. In HCC-endemic areas, failure to consider HCC as a cause of cholangiographic filling defects may result in surgical intervention in a patient with a tumour where the prognosis is almost uniformly bleak.14

REFERENCES