Bull. Tokyo Med. Dent. Univ., 33: 91–97, 1986

HEPATOCELLULAR CARCINOMA PRESENTING EXTRAHEPATIC OBSTRUCTIVE JAUNDICE DUE TO BILE DUCT INVASION— CLINICOPATHOLOGICAL STUDY OF TWO CASES

BY

Seiichiro OSHIMA, Isao OKAYASU and Shigeru HATAKEYAMA*[1]

ABSTRACT

Two rare cases of autopsy and surgery presenting extrahepatic biliary obstruction due to intrabile-duct growth of hepatocellular carcinoma were reported. Clinically obstructive jaundice was predominant in comparison with the other symptoms in both cases. In one autopsy case, hepatocellular carcinoma developed in the right lobe of the cirrhotic liver (posthepatitic). It involved the secondary branch of the right hepatic duct and grew into the common hepatic duct. In the other case of surgical operation, hepatocellular carcinoma, which developed in the posterior portion of the right lobe of the cirrhotic liver (posthepatitic), destroyed the posterior wall of the bifurcation of the bilateral hepatic duct and obstructed the common hepatic duct due to the intraductal cancer growth. From the site of the bile duct invasion or permeation by the tumor, two cases were classified into the peripheral (the former case) and proximal (the latter case) types, respectively. Furthermore, as far as obstructive jaundice is clinically concerned, the possibility should be kept in mind that hepatocellular carcinoma may proliferate into the large bile ducts, apart from that of cholangiocarcinoma or cholelithiasis.

Key words: Hepatoma (hepatocellular carcinoma), extrahepatic obstructive jaundice, bile duct invasion, icteric type

INTRODUCTION

It is well known that hepatocellular carcinoma often invades the blood vessels, especially the portal vein, whereas the intraductal invasion or tumor growth in the biliary tract has been rarely observed. Mallory *et al.* [1] reported on a case of hepatocelular carcinoma with extrahepatic biliary obstruction in 1947. Lin *et al.* [2] named the hepatoma with obstructive jaundice an icteric type of hepatoma and showed that only 8 cases out of 408 cases of hepatoma were of the icteric type. Furthermore, Nonomura *et al.* [3] reviewed the reported cases of hepatoma with extrahepatic biliary obstruction in the English and Japanese literatures which were published from 1947 to 1980. In this paper we report on the two characteristic cases of hepatocellular carcinoma presenting extrahepatic biliary obstruction due to the bile duct invasion and intraductal growth of the tumor. A clinicopathological study was also done concerning the appearance of obstructive jaundice.

MATERIALS AND METHODS

The Autopsy (Case 1) and surgical

*[1] 大島誠一郎, 岡安　勲, 畠山　茂: Department of First Pathology (Chief: Prof. S. HATAKEYAMA), School of Medicine, Tokyo Medical and Dental University (Tokyo Ika Shika Daigaku)
Received for publication, February 6, 1986.

(Case 2) materials were examined pathomorphologically. Thin paraffin sections of the organs were stained by hematoxylin and eosin and by special stains like Elastica Van Gieson, PAS, Masson's trichrome and silver impregnation, if necessary.

Case Report

Case 1. The patient was a 60-year-old male. Family history: His father died of laryngeal cancer at 62. His elderly brother died of stomach cancer (age of death unknown). Past history: At 45 the patient had a frontal cranial fracture in a traffic accident, followed by an operation with blood transfusion. After the operation he suffered from chronic hepatitis. Present illness: His wife noticed his jaundice and the patient consulted a doctor in the neighborhood. The doctor noticed his marked jaundice and liver dysfunction. He was admitted to the Second Surgical Clinic of our hospital.

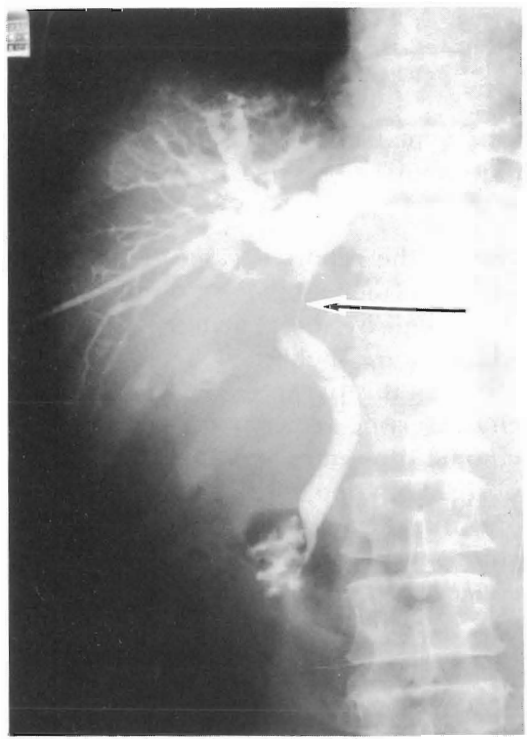

Fig. 1. Percutaneous transhepatic cholangiography shows dilatation of the intrahepatic bile duct and stenotic change (arrow) of the common hepatic duct (Case 1).

Examinations at the time of admission: Total protein 5.9 g/d*l*, BUN 19.1 mg/d*l*, creatinine 0.9 mg/d*l*, SGOT 74 U/*l*, SGPT 84 U/*l*, LDH 245 U/*l*, gamma-GTP 4 U/*l*, alkaline phosphatase 259 U/*l*, total bilirubin 38.5 mg/d*l*, direct bilirubin 25.5 mg/d*l*, white blood cells 3800, red blood cells 3,690,000, hemoglobin 12.6 g/d*l*, hematocrit 36.5%, platelets 73,000, HBsAg(−), HBsAb(+) and alphafetoprotein 2900 ng/m*l*.

An abdominal ultra sound study revealed a massive lesion in the hepatic hilum. A percutaneous transhepatic cholangiographic (PTC) examination disclosed a stenotic change in the common hepatic duct, ranging 2 cm in length and dilatation of the intrahepatic biliary tract (Fig. 1). The aspired bile was white and the cytology was Class II. The PTC, which was done 5 days later, showed a stenotic change in the common bile duct (2.5 cm in length). The patient's level of consciousness became worse on the 5th hospital day with episodes of tarry stool and diminished urine output. Although hemodialysis was performed three times, the patient died on the 16th hospital day.

Autopsy Findings

The cadaver was 162 cm in body length and 64 kg in body weight. The skin was markedly icteric and about 2,000 m*l* of turbid peritoneal fluid were obtained.

The liver (1,210 g) showed an irregular surface and dull edge. Up to a ricegrain-sized pseudolobules surrounded by a rather thin fibrous connective tissue and scattered foci of hemorrhagic necrosis were diffusely observed in the liver.

A subcapsular mass, 3.5 by 1.5 by 3 cm in size, was found in the anterior superior portion of the right lobe of the liver, showing necrosis and bile stasis. The tumor mass, not encapsulated, invaded the surrounding bile duct. A greenish black tumor mass, 4.5 by 2.6 by 1.6 cm in size, with a rather soft consistency, obstructed the common hepatic duct and made a luminal dilatation of the intrahepatic biliary tract (Fig. 2). On microscopical examination, the tumor was hepatocellular carcinoma, Edmondson grade III. The tumor cells were polygonal in shape, having a nucleolus in the small rounded nucelus and were arranged in a thick trabecular pattern surrounded by sinusoids. Some of the tumor cells were of the shape of polygonal giant cells (Fig. 3). The obstructing mass in the duct was composed of tumor cells with focal necrosis (Fig. 4).

Several findings in relation to the hepatic cirrhosis were as follows: Esophageal varices in the lower part of the esophagus, splenomegaly (310 g) and cloudy swelling of the kidneys (210/215 g) with hepatic glomerulosclerosis.

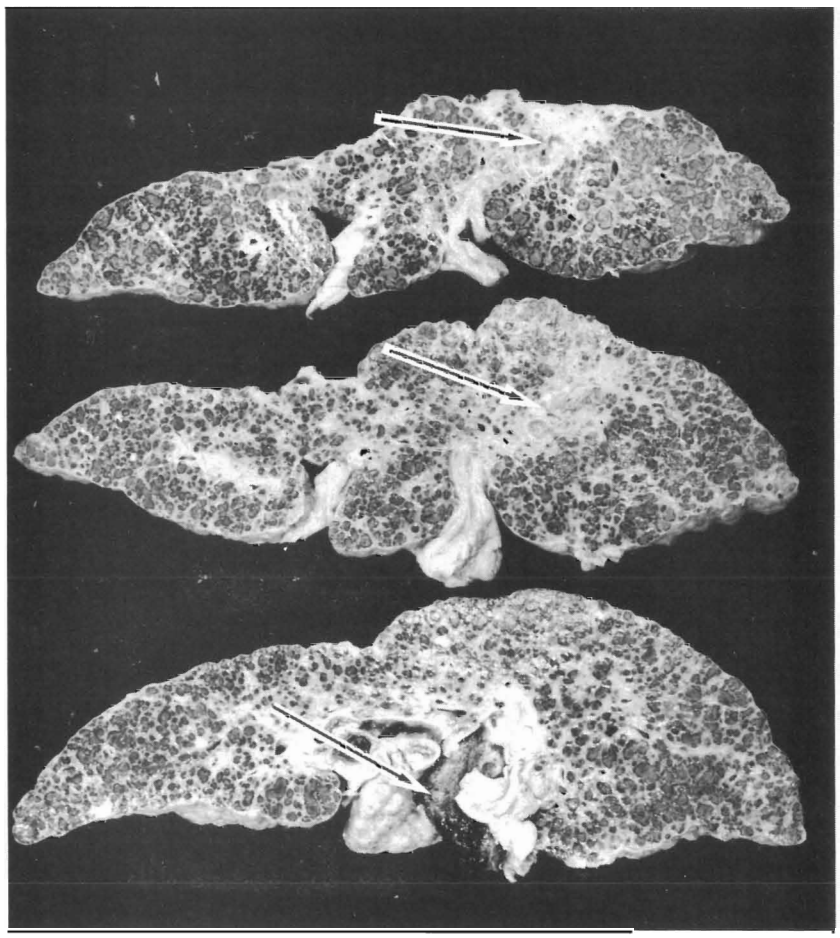

Fig. 2. Cut sections of the liver in Case 1. Hepatoma (arrows) in the subcapsular region of the right lobe of the liver shows continuing growth in the bile duct. The tumor mass (lower arrow) can be observed in the common hepatic duct.

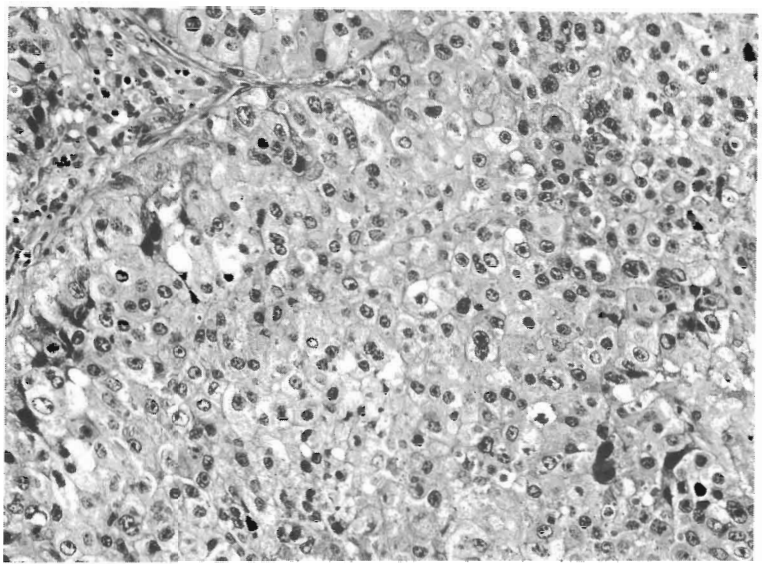

Fig. 3. Histology of the tumor in Case 1 (stained by hematoxylin and eosin, ×200). Hepatocellular carcinoma, solid type, Edmondson grade III.

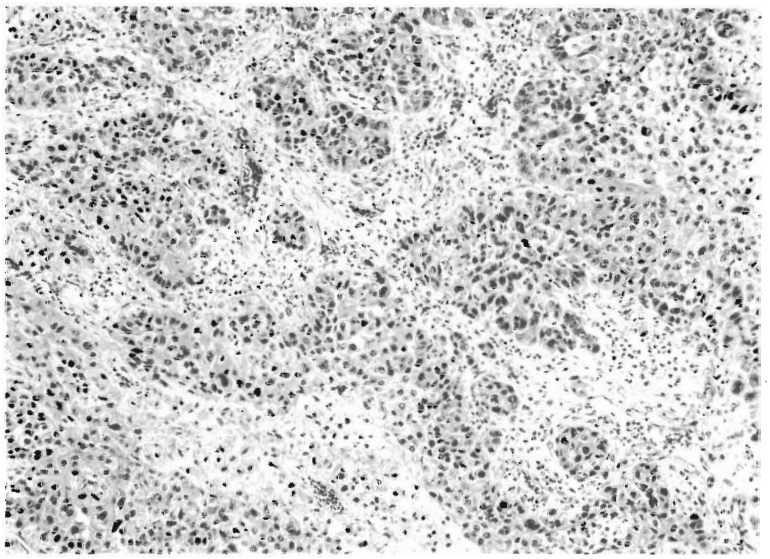

Fig. 4. Histology of the tumor mass in the common hepatic duct (stained by hematoxylin and eosin, ×100) shows scattered tumor cell islands (Case 1).

Other findings at autopsy were as follows: The lungs (320/560 g) showed slight bronchopneumonia, with the bronchi filled with mucous plugs and pleural adhesion of the right lung. Concentric hypertrophy of the heart (360 g) was found. The upper two-thirds of the femur contained a mixed bone marrow. Multiple lymphatic follicles were formed in the bone marrow of the femur, lumbar vertebrae and sternum. Slight atrophy of the thyroid was found. The spermato-

genesis of the testis was well preserved.

CASE 2. The patient was a 62-year-old male. He complained of colic pain in the abdomen and weight loss. Six months later, he was admitted to the First Surgical Clinic. Examinations at the time of admission disclosed SGOT 44 U/*l*, SGPT 46 U/*l*, gamma-GTP 115 U/*l*, alkaline phosphatase 88 U/*l*, total bilirubin 3.2 mg/d*l* and alpha-fetoprotein 42.4 ng/m*l*.

With cholecystolithiasis being suspected, he underwent laparotomy. When cholecystectomy was performed, an intrabiliary obstructive mass was noticed, which was identified to consist of hepatocellular carcinoma cells by biopsy examination. He underwent another operation of right lobectomy of the liver against hepatoma.

Pathological Findings Of Surgical Material

A hen's egg-sized tumor mass was found in the right lobe of the liver. Histologically the tumor was hepatocellular carcinoma (solid type), Edmondson grade III. The tumor invaded the small blood vessels and bile duct. The posterior wall of the intrahepatic common bile duct was invaded directly by the tumor, which formed a 1.7 by 1.2 cm-sized mass in the duct, showing luminal obstruction. The liver showed posthepatitic cirrhosis (B type).

Discussion

Although the invasion of the portal vein by the tumor is generally known, the invasion of the biliary duct is rarely observed in hepatocellular carcinoma. It might be ascribed to the difference in the condition of the tumor growth in respect of the nutrition between the portal vein and biliary tract (Taylor [4]).

Nonomural *et al.* [3] studied and reviewed the reported cases of hepatoma with extrahepatic biliary obstruction in the English and Japanese literatures, which were published from 1947 to 1980. They reviewed 85 cases in the literatures and showed that the most

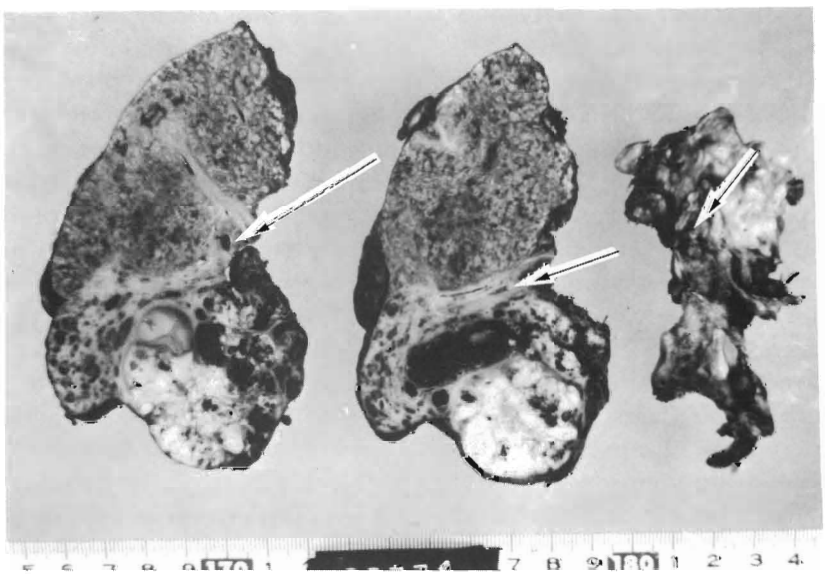

Fig. 5. Transitional cut sections of the right lobe of the liver (Case 2). The tumor mass occupying the common hepatic duct can be seen (arrows).

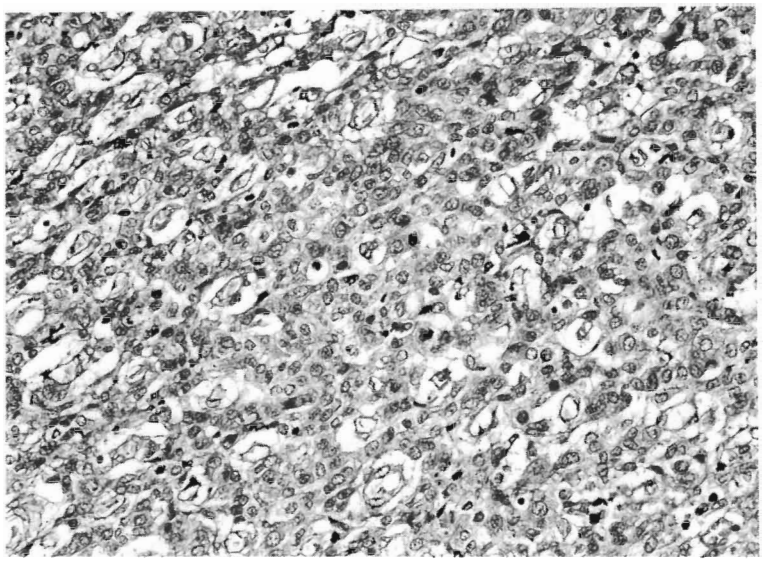

Fig. 6. Histology of the tumor (stained by hematoxylin and eosin, ×200) (Case 2). Hepatocellular carcinoma, solid type, Edmondson Grade III.

common initial symptoms of the patients with such a tumor were jaundice and epigastralgia. In Case 1, the first symptom was jaundice and the duration from the onset of the symptom to death was only 23 days. He could not be diagnosed as hepatocellular carcinoma during his hospital days. In Case 2, the first symptom was colic pain in the abdomen. The diagnosis of hepatocellular carcinoma was not available until the laparotomy with biopsy of the intrabiliary mass was performed.

As Nakashima *et al.* [5] reported, the macroscopic feature of hepatocellular carcinoma with bile duct invasion is that such a tumor has little capsule around the tumor mass and shows an infiltrative growth into the surrounding tissues. Actually, in both of our Cases 1 and 2, the tumors were poorly encapsulated. Histology showed an Edmondson grade III type or rather poorly differentiated grading of hepatoma.

In Case 1 the primary site of the tumor was situated in the anterior and lateral portion of the right lobe of the liver. The size of the tumor was 3.5 by 3 cm, which was rather smaller than the mass growing in the intrahepatic biliary tract. The rapid growth of the mass contributed to the obstructive jaundice, resulting in the exacerbation of the disease.

On the other hand, in Case 2 the tumor was quite close to the bifurcation of the common hepatic duct in the right lobe. Accordingly, from the viewpoint of the condition of the destruction and permeation of the bile duct by the tumor, we can call the former type of hepatoma with obstructive jaundice the "peripheral type" and the latter the "proximal type" (Fig. 7A, B). The proximal type is generally thought to be the main type of hepatoma causing obstructive jaundice. But the peripheral type should be also kept in mind in the diagnosis of the cases presenting obstructive jaundice.

From this reason, it must be noted that in the case with obstructive jaundice of unknown cause hemobilia obtained from a tube of PTC or the surgical material at

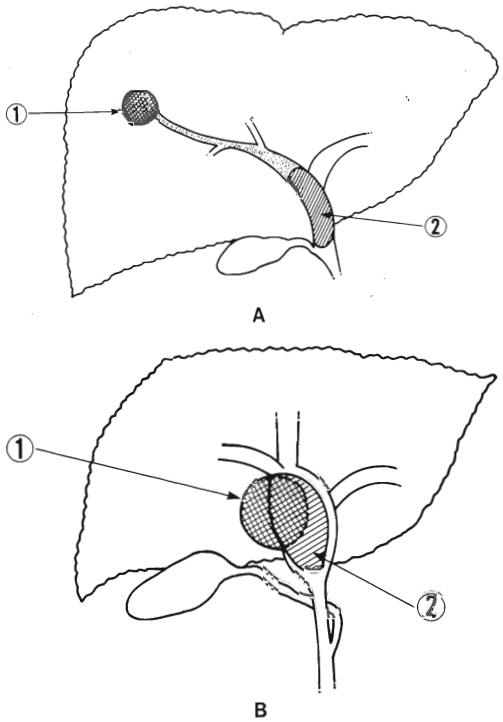

Fig. 7. Schematic presentation of Case 1 "peripheral type" (A) and Case 2 "proximal type" (B). Intraductal growth of the tumor is observed, resulting in the extrahepatic biliary obstruction. Arrow (1) shows the primary tumor and arrow (2) the intraductal tumor. Intraductal dots (A) shows the continuing growth of the hepatoma from the primary site to the obstructing tumor mass.

an operation should be examined histologically, as mentioned by Williams *et al.* [6].

References

1) Mallory, T. B., *et al.*: Case records of the Massachusetts General Hospital. New Eng. J. Med., 237: 673–676, 147.
2) Lin, T., *et al.*: Icteric type of hepatoma. Med. Chir. Diag., 4: 267, 1975.
3) Nonomura, T., *et al.*: Hepatocellular carcinoma among the Japanese presenting extrahepatic biliary obstruction. Acta Pathol. Jpn., 33: 789–806, 1983.
4) Taylor, N. B., *et al.*: The Physiological Basis of Medical Practice. The Wiliams & Wilkins Company, Baltimore, 1961, p.640.
5) Nakashima, T., *et al.*: A study of hepatocellular carcinoma among the Japanese from the point of the view of macrodevelopmental pathology–Gross anatomical types classified in its relation to capsule formation, Kurume Med. J., 24: 43, 1977.
6) William, A. J., and Adalei, Z.: Biliary obstruction due to hemobilia casued by liver cell carcinoma. Ann. Surg., 153: 706–710, 1961.