Icteric Type Hepatocellular Carcinoma: Clinical Features, Diagnosis and Treatment

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Icteric type hepatocellular carcinoma (HCC), a clinical entity of HCC presenting as obstructive jaundice caused by floating tumor debris in common bile duct, is rare. Taiwan has a high incidence of HCC and liver cirrhosis. The clinical features, diagnosis and treatment of this disease entity were reviewed. Not all patients with this disease were terminally ill. With proper management and good palliation, occasional cure are possible. (Chang Gung Med J 2002;25:496-501)

Key words: obstructive jaundice, hepatocellular carcinoma, hepatic resection, choledochotomy, biliary tract decompression.

Hepatocellular carcinoma (HCC) is a relatively common malignant tumor throughout the world, and is frequently encountered in Taiwan. Jaundice is present in 19-40% of patients with HCC at the time of diagnosis. The common causes of jaundice are the underlying liver cirrhosis and/or extensive hepatic parenchymal destruction of tumor. Death from HCC is often heralded by the appearance of jaundice in these patients. Obstructive jaundice as the main presenting clinical feature is uncommon. The bile ducts can be obstructed by tumor thrombi, hemobilia, tumor compression, or tumor infiltration. Lin clinically classified such cases of HCC with obstructive jaundice due to the migration of tumor thrombi as “icteric hepatoma” and stated that they presented difficult problems in differential diagnosis. Specific treatment for HCC in such circumstance is difficult and the prognosis is poor. Since the availability of modern diagnostic modalities and surgical techniques, this paper attempts to review the clinical presentation, diagnosis and management of this specific type of HCC.

Clinical features

Most of the patients experienced repeated episodes of jaundice. Upper abdominal pain was presented in some of them. Fever and chills were also noted. Body weight loss, pruritis, nausea, anorexia, vomiting and liver enlargement were the most common signs at admission. Tumor invasion into a branch of the intrahepatic duct system can also cause mechanical obstruction of the main ducts by one of three means: 1) the tumor may grow continuously in a distal fashion, filling the entire extrahepatic biliary system with a solid cast of tumor; 2) a fragment of necrotic tumor may separate from the proximal intraductal growth, migrating to the distal common bile duct and causing obstruction; or 3) hemorrhage from the tumor may partially or completely fill the biliary tree with blood clots. Tumor debris may arise from a neoplasm that directly invades the bile duct or from necrosis of a tumor mass that is adjacent to a major bile duct. The ultimate site of duct obstruction may be close to or quite distant from the main tumor mass, depending on the size of the duct.
and of the fragment. Obstructive jaundice caused by biliary stones or cholangiocarcinoma usually improves by simply biliary drainage such as nasobiliary drainage or percutaneous transhepatic biliary drainage (PTBD). However, in the case of icteric hepatomas, if the HCC itself is not treated in combination with biliary drainage, the tumor in the bile duct may grow and bleed, resulting in inadequate reduction in jaundice. In icteric hepatomas, the tumor thrombus in the bile duct may compress the portal branch since both the portal vein and bile duct are surrounded by the same Glissonian sheath. A decrease in portal blood supply may cause degenerative change in non-cancerous liver parenchyma. Since non-cancerous liver parenchyma in the affected liver segments does not contribute significantly to the total liver function, this should be borne in mind when deciding on the degree of surgical resection.

Diagnosis: laboratory and imaging studies

Patients with HCC and obstructive jaundice secondary to ruptured HCC into the biliary tree present difficult and challenging problems in differential diagnosis. This rare complication must be differentiated from jaundice because of hilar invasion, diffuse tumor infiltration, or progressive terminal hepatic failure for which there is no chance of palliation or possible cure. The presence of an elevated alpha-fetoprotein (AFP) level and positive hepatitis B surface antigen (HBsAg) helps to establish the diagnosis. In the absence of this finding, especially with no primary hepatic tumor being detected, a variety of other diagnoses were entertained. Despite remarkable recent improvements in the imaging tools for diagnosis of HCC, such cases were often still incorrectly diagnosed as cholangiocarcinoma or choledocholithiasis. Ultrasoundography (US) and computed tomography (CT) are helpful in showing hepatic tumors and dilated intrahepatic and/or extrahepatic ducts containing dense material corresponding to tumor debris. Sometimes, the location and cause of biliary obstruction cannot be made clear by US and CT.

Cholangiography

Percutaneous transhepatic cholangiography (PTC) and endoscopic retrograde cholangiopancreatography (ERCP) are of some value in the diagnosis of this disease entity. According to Wu et al., the cholangiographic features of these patients can be divided into the following three categories: 1) Intraductal filling defects resulting in complete or partial obstruction and ductal dilation. 2)Abrupt complete obstruction of the common hepatic duct with an irregular cut surface, and 3) Tumor encasement or stricture of the major hepatic duct without filling defects. Other miscellaneous findings included displacement of the ductal system by the extrabiliary mass effect, a "rat tail" stricture and a bulky tumor growing or polypoid lesions with filling defects on cholangiography. The intraluminal filling defects and irregular cutting surfaces were found to be blood clots and/or necrotic tumor debris. The other differential diagnoses of this type cholangiography include cholangiocarcinoma, intraductal polyps, or mucin-hypersecreting intrahepatic biliary neoplasms.

Magnetic resonance cholangiopancreatography (MRCP)

It is an absolutely noninvasive imaging modality, allowing demonstration of the biliary-pancreatic system by means of data acquisition and images post-processing reconstruction presenting at the coronal plane similar to conventional cholangiography. It requires neither contrast medium injection nor biliary endoscopic intervention; therefore, it completely avoids the formidable complications inherent to conventional cholangiographic examinations. Recent studies of MRCP have claimed high accuracy in depicting various biliary and pancreatic disease entities, with reported sensitivities approaching 90-95% for biliary and pancreatic ductal dilatation and stricture. According to Yeh et al., MRCP and direct cholangiography provided the equivalent diagnostic information on the visualization of the intrahepatic ducts and opacification of the common hepatic duct. The presence of an encapsulated mass with a central scar or internal fat, by means of T2-weighted axial and coronal plane of MR images, are very useful to diagnose icteric HCC.

Angiography

Angiography is indicated when vascular extension is suspected. Not always, hypervascular tumors can be found in angiography. Transcatheter
hepatic arterial embolization (TAE) is effective to control hemobilia.(23)

**Treatment**

**General principles**

The excellent palliation that has been achieved by our group and others suggest that aggressive examination and treatment are warranted in patients with HCC who have extrahepatic biliary obstruction.(11-16) Identification of specific cause of jaundice in patients with HCC is of great importance. The goals of operative intervention in these patients are biliary decompression, removal of tumor debris, and, if possible, a direct attack on the underlying neoplasm. Operative cholangioscopy is an important adjunct to formal common bile duct exploration in the initial assessment and planning of operative strategy. Direct endoscopic visualization of the bile ducts will facilitate differentiation of neoplastic strictures from filling defects seen at cholangiography.(39,40) Removal of gross tumor debris as much as possible through manual extraction and irrigation is crucial and should be verified at the conclusion of the procedure either by repeated endoscopy or cholangiography. Numerous techniques can be used for biliary decompression and drainage.(41,42) The decision to perform a hepatic resection, internal biliary stenting, or biliary diversion should be based on the nature and location of the main tumor mass, severity of the symptoms, associated neoplastic strictures, and the patient's overall status.(43,44) Most patients will have satisfactory palliation if the appropriate procedures are selected and performed safely.

**Operative treatments**

It has generally been accepted that pre-operative jaundice reduction is unnecessary for abdominal major surgeries.(43,46) Hatfield et al.(47) reported that there was a negligible difference between pre-operatively treated and control groups. To the contrary, pre-operative reduction of jaundice is essential for the successful hepatectomy for icteric HCC. Icteric HCC-bearing liver is usually related to hepatitis or liver cirrhosis. Accurate pre-operative evaluation of liver function is essential for patient selection to prevent post-operative liver failure.(23)

At the time of duct exploration, one should look carefully for free-floating debris as well as tumor that may have become adherent to the duct wall. These lesions may be vascular, and the debris may consist of tumor mixed with clot. If tumor fragments in the bile duct are not adherent to the wall, they can be extracted easily. However, if the intraductal mass is continuous with the mass intrahepatic tumor, torrential hemorrhage may occur on attempted removal. Hemostasis can usually be achieved by suturing, electrocauterization, compression, Pringle's maneuver, and hepatic arterial ligation. Histologic evaluation of all bile duct debris should be routine and will usually confirm the diagnosis of a primary or metastatic carcinoma.(29)

The ideal treatment of these patients is hepatic resection.(15,18,20,48-50) Unfortunately, most tumors are unsuitable for resection, because the tumor is often close to the hepatic hilum. In patients with more advanced disease, satisfactory palliation can be achieved with duct exploration and removal of debris followed by tube decompression or a biliary-enteric bypass. Although a simple T-tube may be easier to place than a transhepatic tube, the latter has several advantages. Transhepatic tubes can be more easily irrigated over a long period and provide better drainage than T-tubes.(51) In addition, properly placed transhepatic tubes can be changed periodically using fluoroscopic guidance when the tubes become occluded. For operable tumors, a staged approach with initial biliary decompression followed by hepatic resection as a second procedure may have been done because of the poor general condition of some of these patients at the initial examination.(19,20)

Recurrent episodic jaundice or cholangitis suggests extrahepatic biliary obstruction in most patients with tumors. The clinical manifestation is uncommon in patients with extensive parenchymal hepatic metastases. In the absence of definite tumor progression or evidence of generalized clinical deterioration, the presence of episodic jaundice or cholangitis should promote the search for extrahepatic obstruction as a cause of jaundice.(18-20) The prognosis of patients with obstructive jaundice due to HCC is dismal; however, with proper management, good palliation and occasional cure are still possible in some patients.(52)

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黃疸性肝癌：臨床症狀、診斷及治療

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黃疸型肝癌是泛指肝癌侵犯至膽管導而產生阻塞性黃疸。台灣地區雖好發肝癌及肝硬化，但本病症非常少見。本文將此病症之臨床症狀、診斷及處理原則做一綜合性報告。此病並非絕症，經過適當的處置而緩解，少數病人亦偶會有長期的存活。 (長庚醫誌 2002:25:496-501)

關鍵字：阻塞性黃疸，肝細胞癌，肝切除，總膽管切開引流，膽道解壓。