

Percutaneous Transcatheteral Biliary Biopsy (PTBB)

— A Report of Two Cases —

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In two patients with obstructive jaundice, percutaneous transhepatic cholangiography (PTC) and percutaneous transhepatic biliary drainage (PTBD) were performed. During PTBD, the percutaneous transcatheteral biliary biopsy (PTBB) with the biopsy forceps of the gastrofiberscope was performed through the biliary stent catheter. Biopsy specimens were successfully obtained and histopathologic findings were satisfactory in both cases.

Key Words: *Percutaneous transhepatic biliary drainage (PTBD), Percutaneous transcatheteral biliary biopsy (PTBB)*

INTRODUCTION

Since biliary drainage has advanced with the development of percutaneous transhepatic cholangiography (PTC), a two-step method was introduced; initially PTC was performed by a 20- or 21-gauge needle and, if necessary, a second puncture was performed using the same gauge needle covered by a polyethylene tube.¹⁾ Lately, the direct approach under fluoroscopic control was used where the needle advanced parallel to the X-ray beam and its direction was regulated more accurately. Moreover, the difficulty in puncturing the bile duct selectively was overcome by the advent of ultrasonic guidance.²⁾ Percutaneous biliary drainage (PTBD) is widely accepted for palliation of malignant obstruction, with lower morbidity and mortality.³⁾ In addition to the symptomatic relief and control of metabolic

alterations associated with obstructive jaundice, the technique provides diagnostic information, including the character, level and extent of obstruction. Also, biliary catheterization provides access for brush biopsy so that a specific cytologic diagnosis can be made.⁴⁾ The introduced catheter could be used to approach the obstructive lesion. Thus, we thought that it would be possible to obtain enough specimen for histopathologic findings. So we tried to perform a biopsy with the gastrofiberscopic biopsy forceps through the biliary stent catheter under fluoroscopic control. We report the first two cases of percutaneous transcatheteral biliary biopsy (PTBB) during PTBD and the successful results.

CASE REPORT

Case 1

A 74-year-old man was hospitalized because of generalized icterus and abdominal pain of 3 months duration. His medical history revealed that he had been hospitalized two times previously for removal of these symptoms. Since 3 weeks before, the above

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symptoms were exacerbated. At admission, his vital signs were stable. On physical examination, icteric skin and sclera with anemic conjunctiva, pain and tenderness of the epigastrium were shown. The hemoglobin was 9.9g/dl and leukocyte count was $21.5 \times 10^3/\text{ml}$.

Blood chemistry showed that creatinine was 0.9mg/dl, ALT 104IU/L, AST 119IU/L, alkaline phosphatase 610IU/L, LDH 201IU/L, total bilirubin 20.3mg/dl, direct bilirubin 7.3mg/dl, total protein 6.2g/dl, albumin 2.5g/dl, globulin 3.7g/dl, total cholesterol 95mg/dl, free cholesterol 122mg/dl, and triglyceride was 148mg/dl. APTT was 29sec and PT was 11.6sec (100%). Clonorchiasis skin test was negative. Radiologic examinations were started. Ultrasonography demonstrated dilatation of the gallbladder and intra-and extrahepatic bile ducts, and complete obstruction of the lower common bile duct (CBC). Abdominal computed tomography revealed a protruded mass in the lumen of the lower CBD,

but no regional metastasis. PTC also demonstrated the same findings (Fig. 1). We tried PTBD and PTBB for the decompression and histopathologic diagnosis.

After preparation of the patient, diagnostic PTC was carried out from the right flank by the Chiba technique.⁵⁾ The two-step procedure of catheterization was performed as follows; puncture of a dilated intrahepatic duct with a 21-gauge Chiba needle, insertion of a guide wire, removal of the needle, pushing of the 19-gauge sheath catheter over the guide wire and gradual dilatation with several dilators (up to 8-Fr). For the procedure of PTBB, a tunnel was made to the obstructive site with the Miller double mushroom biliary stent catheter (9-Fr).

Under fluoroscopic control, the biopsy forceps of the gastrofiberscope were introduced through the stent catheter to the tumor mass and biopsy



Fig. 1. Percutaneous transhepatic cholangiography (PTC) showing dilations of intra- and extrahepatic biliary ducts and complete obstruction of the lower common bile duct (CBD) in case 1.

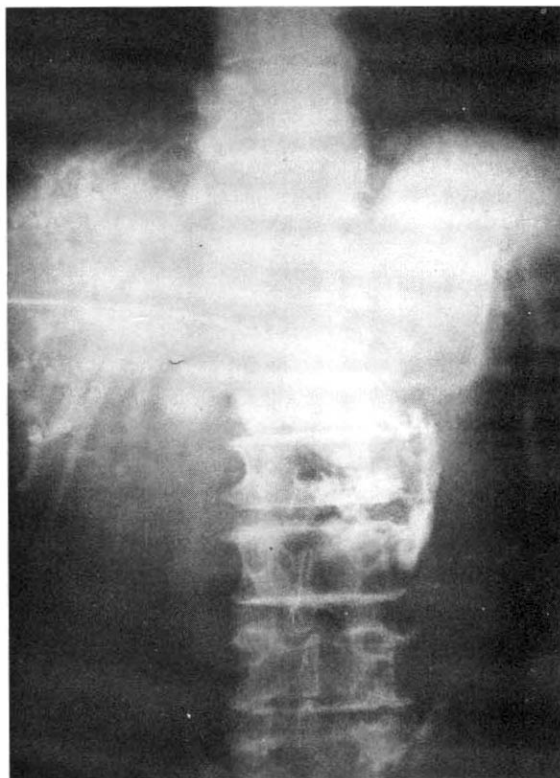


Fig. 2. Percutaneous transcatheteral biliary biopsy (PTBB) from the tumor mass in the lower CBD with the long forceps of the gastrofiberscope. Previous leakage of bile was detected around the obstructive site due to traumatic perforation by the guide wire.

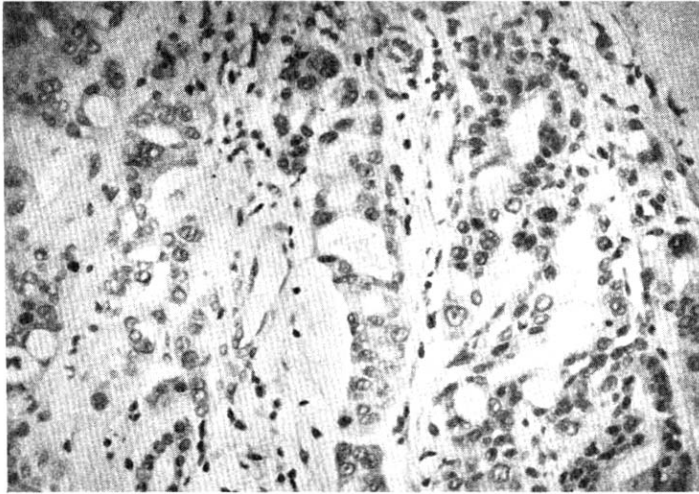


Fig. 3. Biopsy findings showing moderately differentiated adenocarcinoma of the bile duct in case 1. The distortion of the glandular arrangement and frank anaplastic feature of lining epithelium are demonstrated (H and E, x100).

specimens were taken from the mass (Fig. 2). Then the leakage of contrast dye was detected around the obstructive site due to traumatic perforation by the guide wire. After placing the external biliary drainage tube, the procedure of PTBD was completed. The biopsy specimen was successfully obtained and the histopathologic finding was moderately differentiated adenocarcinoma of the bile duct (Fig. 3). After PTBD and PTBB, a shock state developed in this patient, the blood pressure was 90/40, and there was bloody bile drainage from the external biliary drainage tube. Five pints of whole blood were transfused. Thereafter, vital signs were stable. But abdominal distension with tenderness was slowly detected and a tubogram showed some leakage of the contrast dye into the subdiaphragmatic space on the 7th postprocedure day. Bile peritonitis developed and he was discharged without clinical improvement.

Case 2

A 55-year-old man was admitted because of epigastric pain and generalized icterus. Hepatomegaly, about 3cm from the right subcostal margin, and icteric sclera and skin were shown. He had a past history of heavy alcohol drinking. On admission, the level of AST was 98IU/L, ALT 107IU/L, alkaline phosphatase 148IU/L, total bilirubin 6.5mg/dl, direct bilirubin 3.3mg/dl, albumin 5.1g/dl, globulin 3.4g/dl,

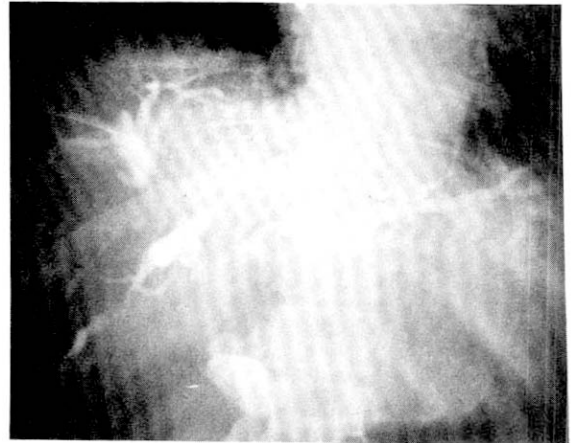


Fig. 4. PTC showing tapered narrowing of the internal biliary tree with mild dilatation of the peripheral portion and the narrowing segment extended to the extrahepatic duct in case 2.

cholesterol 300mg/dl and triglyceride was 366 mg/dl. Urine bilirubin was 3 positive and stool clonorchiasis was positive. APTT was 36.9sec and PT was 11.2sec. Ultrasonographic findings were increased hepatic echogenicity with dilatation of the intrahepatic biliary tree, considerable echogenic density in the CBD, and sludge-like density on the dependent portion of the gallbladder. Sclerosing

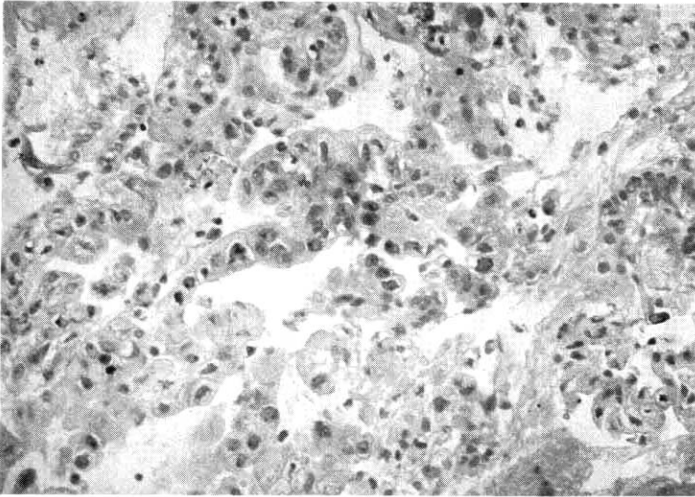


Fig. 5. Biopsy findings showing adenocarcinoma of the bile duct with glandular distortion and atypia of the lining epithelium in case 2 (H and E,x100).

cholangitis was suspected. Abdominal CT scan and colloidal liver scanning showed only hepatomegaly. PTC and PTBB were performed. PTC demonstrated tapered narrowing of the internal biliary tree with mild dilatation of the peripheral portion and the narrowing segment extended to the extrahepatic duct (Fig. 4). We carried out PTBB as described in the above case. A biopsy specimen was also successfully obtained and the histopathologic findings were suggestive of adenocarcinoma of the bile duct with atypia of ductular epithelium (Fig. 5). No specific complication was found after the procedure in this case.

DISCUSSION

A tissue-confirmed diagnosis of neoplasm is desirable in the management of patients with tumor-caused obstructions of the biliary ducts. Even though the diagnosis is suggested by cholangiography, histologic diagnosis is very important and has a major role in prognosis. In fact, most histologic diagnoses are often established only after operative biopsy, and are sometimes confirmed at necropsy. So cholangiography alone is not definitive for malignancy, and other possible causes of bile duct stricture, such as sclerosing cholangitis, can not be well discriminated.

For the tissue confirmation of a malignant neoplasm, a cytologic examination of the bile via

radiologically placed drainage catheters has been reported.⁶⁾ While the detection rate of 34% was low, bile cytology was recommended as essentially a simple, noninvasive method for confirmation of a clinical and cholangiographic diagnosis.⁴⁾ On the other hand, the brush biopsy of biliary ducts via percutaneous transhepatic catheterization has been tried and a successful result was reported by Elyaderani and Gabrielle.⁷⁾ In their one case, although a forceps biopsy was performed, the result was negative. They thought that the negative result from the forceps biopsy was probably due to the long-standing percutaneous catheterization and the chronic inflammation or the inappropriate position of the forceps, and suggested that a brush or forceps biopsy should be performed as soon as possible following catheterization. To make a precise histopathologic diagnosis in malignant biliary stricture, a forceps biopsy seems to be a most desirable method. In addition, a higher accuracy is expected. So it is possible to transcatheterally approach the site of the obstruction of the biliary tract with the long biopsy forceps. We performed PTBB in two cases. Biopsy specimens were successfully obtained and a histopathologic diagnosis was correctly made. But in the first case, the shock stage developed immediately after the procedure due to hemorrhage, and gradually bile peritonitis also arose. On examination of the cholangiogram, we considered that the hemorrhage and the bile leakage did not occur at

the site of the biopsy, but rather previously occurred at the site of the traumatic perforation by the guide wire. In the second case, no specific complication followed the procedure of PTBB. The method of PTBB is possible for biopsy of intra-and extrahepatic biliary obstructions. But the biopsy of the intrahepatic biliary obstruction is safer than that of the extrahepatic obstruction because the intrahepatic hemorrhage and bile leakage is limited by the parenchyma of the liver. But even in an extra-hepatic obstruction, the biopsy forceps are easily directed to approach the mass of the obstructive site and complications are rarely expected. Our first patient had extrahepatic obstructions accompanied by complications after the procedure. But in this case, the complications seemed to have no relation to the anatomical site of obstruction. Percutaneous transhepatic cholangioscopy^{5,8)} and transcatheteral cholangioscopy are other methods for establishing a histopathological diagnosis, when the cholangioscope is so equipped. But in order to perform percutaneous transhepatic cholangioscopy, after intrahepatic dilatation to a larger diameter using a fibrous tract dilatator, it take 3 weeks to insert a flexible fiberoptic choledochoscope through the solid intrahepatic fibrous tract. Also, in transcatheteral cholangioscopy, catheters of a larger diameter and more extensive dilatation are needed for the passage of the cholangioscope through the catheter, which can give rise to more complications. We considered that PTBB was a safe and simple method of biliary biopsy during PTBD without special instruments. Additional studies and observations are needed to

evaluate the results of PTBB, and it is thought that the method as well as the instrument should be further improved.

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