OBJECTIVE: To determine the effect of endoscopic sphincterotomy in the management of biliary hydatid disease.


SETTING: A university-affiliated hospital in Adana, Turkey.

PATIENTS: Five patients with biliary hydatid disease, in which the cyst had ruptured into the biliary tree. The follow-up ranged from 3 to 12 months.

INTERVENTION: Endoscopic sphincterotomy.

MAIN OUTCOME MEASURES: Morbidity, mortality and recurrence of the disease.

RESULTS: All patients underwent successful endoscopic sphincterotomy, including removal of daughter cysts. During the follow-up period, ultrasonography and laboratory investigations showed complete cure in all patients. There were no complications due to endoscopic sphincterotomy.

CONCLUSION: Endoscopic sphincterotomy is the treatment of choice for the management of hydatid cysts that have ruptured into the biliary tract causing obstructive jaundice.

The liver is involved in 50% to 70% of patients with hydatid disease.1 Intrabiliary rupture, which has an incidence of 5% to 17%, is a common complication of hydatid cysts.1,2 The communication is usually occult, resulting from small tears between the cyst wall and small biliary radicles. Large tears involving large bile ducts are less frequent.1,2 Acute obstructive jaundice occurs when cyst elements empty into the biliary tree.2,3

Over the last decade substantial improvements have been made in the diagnosis and management of biliary hydatid disease.4,5 Before the introduction of ultrasonography, the diagnosis was only made at laparotomy, and the
only definitive treatment for biliary disease was surgery, which is associated with high morbidity and mortality and a high recurrence rate.\textsuperscript{9,10} Endoscopic retrograde cholangiopancreatography (ERCP) has proved to be a valuable technique for the diagnosis of biliary hydatid disease.\textsuperscript{6,8} Another recent improvement has been the introduction of a nonsurgical endoscopic method for the management of biliary echinococcal disease; endoscopic sphincterotomy has proved to be an alternative procedure.\textsuperscript{8,11,12} In 1985, Al Karawi and Hanid published the first report on the use of this procedure.

We present the results of endoscopic sphincterotomy in five patients with biliary hydatid disease.

Patients and Methods

Five patients (four men, one woman) with a hydatid liver cyst that had ruptured into the biliary tree were investigated at the Balcari Hospital, Adana, Turkey, between January 1992 and December 1994. The patients ranged in age from 29 to 76 years (mean 45.5 years). All patients presented with cholestatic jaundice, and three patients had additional signs of cholangitis. There was no history of jaundice in any of the patients. The liver cyst had ruptured spontaneously in three patients and after surgery in two patients. Two patients had been operated for a liver hydatid cyst in different hospitals in Turkey. In case 3, a 32-year-old man who had biliary hydatid disease after surgery, the jaundice deepened despite drainage of the cyst. Complete blood count, liver function tests, abdominal ultrasonography, computed tomography and ERCP were carried out in all patients (Table I). The indirect hemagglutination test was also performed to determine the titre for hydatid disease.

The disease was managed endoscopically in all patients. The treatment included endoscopic sphincterotomy and extraction of daughter cysts or hydatid membranes from the biliary tree. A nasobiliary tube was then inserted through which 10 mL of 23% hypertonic saline (scolicidal agent) was injected three times daily for 5 days with the patient in a head-down position for irrigation and to clear the biliary tree and communicating liver cyst. No complications due to endoscopic procedures occurred. After the endoscopic procedure all patients received mebendazole (400 mg twice daily) for 4 weeks followed by a 2-week drug-free period for two (four patients) or three courses (one patient). No side effects of mebendazole were noted. Ultrasonography was re-

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<td>Radiologic and Endoscopic Findings and Outcome in Five Patients With Biliary Hydatid Disease</td>
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<td>ES for removal of daughter cysts</td>
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ES = endoscopic sphincterotomy, CBD = common bile duct
peated during the follow-up period, which ranged from 3 to 12 months.

**RESULTS**

On admission all five patients had an elevated leukocyte count (12.0 to 30.0 × 10^9/L). Two patients had eosinophilia (over 5%). Liver function test results were abnormal in all patients; they had elevated levels of bilirubin, aminotransferases, alkaline phosphatase and γ-glutamyl transpeptidase. The indirect hemagglutination titre for hydatid disease was elevated in all patients (range from 1:412 to 1:1926). Abdominal ultrasonography and computed tomography demonstrated a hydatid liver cyst and different degrees of dilatation of the bile ducts.

ERCP revealed dilatation of the biliary tree and communication with the hydatid liver cysts in all patients. Endoscopic sphincterotomy was carried out in all patients. In case 2, ERCP demonstrated filling defects due to cyst materials in the common bile duct and intrahepatic ducts (Fig. 1). In this patient hydatid daughter cysts were impacted in the ampulla of Vater. ERCP performed 10 days after endoscopic sphincterotomy showed a decrease in cyst size and in the diameter of the common bile duct; also the common-bile-duct filling defects had disappeared (Fig. 2). In case 3 (Fig. 3, left), a patient who had biliary hydatid disease after surgery, persistent drainage of bile (700 mL/d) through the catheter placed in the residual cyst cavity was seen. Five days after endoscopic sphincterotomy, hypertonic saline irrigation and drainage through a balloon catheter (Fig. 3, right), drainage of bile decreased to 50 mL/d, and the catheter was removed. All patients also underwent biliary lavage with hypertonic saline through a nasobiliary tube.

**FIG. 1.** Case 2. Endoscopic retrograde cholangiopancreatography (ERCP) demonstrated dilated intrahepatic biliary tree and common bile duct. Note filling defects due to cyst materials in common bile duct and intrahepatic ducts.

**FIG. 2.** Case 2. ERCP 10 days after endoscopic treatment showed decrease in cyst size and in diameter of common bile duct. Common-bile-duct filling defects have disappeared.
Hydatid cysts of the liver exert pressure on the surrounding parenchyma, and in most cases the cysts eventually leak into small bile ducts or perforate into large ones. In large surgical series, some sort of communication was found in 40% to 90% of cysts. However, biliary obstruction is reported to occur in only 5% to 17% of cases. The cystic elements do not die in the biliary tree and may cause obstruction and cholangitis at any time in their life cycle. If the communication is with small biliary radicles, hydatid fluid, hydatid sand and occasionally daughter vesicles or fragmented membranes can be discharged into the biliary tree. Less frequently, a large bile duct is involved, allowing daughter...

FIG. 3. Case 3. Left: ERCP showing communication between cyst space and biliary tree. Right: Balloon catheter inserted into cyst space for irrigation and drainage.
vesicles and fragmented membranes to escape into the biliary tree. In this situation, obstructive jaundice or cholangitis is much more common than when the communication is small. 17,18

Imaging procedures such as ultrasonography, computed tomography and magnetic resonance imaging are useful in diagnosing biliary hydatid disease resulting from rupture of a liver hydatid cyst. 1,7,9,17–19 Magnetic resonance imaging may show a characteristic intense rim, daughter cyst and detachment of the membranes. 1,19 ERCP provides more comprehensive information in patients with biliary hydatid disease. 3,11,12,15,20 Daughter cysts may be seen in the duodenum, impacted in the ampulla of Vater or obstructing any part of the biliary tree. 21,22 A communication between the cyst cavity and the biliary tree can be demonstrated, as was the case in all our patients. In one patient, hydatid daughter cysts were impacted in the ampulla of Vater. ERCP also helps to differentiate cholestatic jaundice due to ruptured hydatid liver cyst from other causes of obstruction such as choledocholithiasis and carcinoma. 19 Percutaneous transhepatic cholangiography is hazardous when used in the diagnosis of patients with hydatid liver disease.

Biliary hydatid cysts usually cause cholestatic jaundice and cholangitis, but some patients may have subclinical and recurrent disease, giving rise to intermittent minor symptoms. 21,24 Dyszka, Shahgvi and Peddamatham 25 reported a patient in whom intermittent occurrence of daughter cysts in the common bile duct was demonstrated by ERCP. They postulated a possible intermittent obstruction, by a daughter cyst, of the cystobiliary communication, which is reopened when the cyst enters the bile ducts. All our patients had cholestatic jaundice, and three patients had additional signs of cholangitis.

Until recently, surgical removal of liver and biliary hydatid cysts was the only form of therapy, but the surgical procedure is associated with numerous complications, including infection within the residual cavity, sinus formation, secondary peritoneal cysts and external biliary fistulas. Also, recurrence or dissemination can occur after surgery. 3,10,22 Endoscopic sphincterotomy has proved to be an alternative treatment for patients with biliary hydatid disease. 3,4 In 1985, Al Karawi and Hanid 8 published the first report on the use of ERCP with endoscopic sphincterotomy and extraction of retained echinococcal daughter cysts from the common bile duct. In 1986, four patients with rupture of hydatid liver cysts into the biliary tree were treated endoscopically by Shemesh and colleagues. 11 Al Karawi, Yasawy and Mohammed 17 reported a further six patients who had biliary hydatid disease managed endoscopically. We have used endoscopy in the diagnosis and the treatment of patients with biliary hydatid disease. Sphincterotomy, extraction of cyst material and biliary irrigation were carried out endoscopically in all our patients with success. It has been suggested that two to three courses of mebendazole may play an important role in prophylaxis after surgery or endoscopic evacuation of a ruptured cyst into the biliary tree. 16,20 Mebendazole was given as additional medical therapy to all patients. Ultrasonography done during the follow-up period in all patients showed cure of the disease.

CONCLUSIONS

Endoscopic management of biliary echinococcal disease is an effective, safe method after a hepatic cyst has ruptured into the biliary tree and prevents serious complications such as cholangitis and septicemia. This method may be the treatment of choice in the management of cases of biliary hydatid disease.

References

12. Vicente VF, Garcia EM, Marco AS: Endoscopic retrograde cholangiography (ERCP) and complicated hepatic hydatid cyst in the biliary tract. Eu


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**Conference on pain**

Sponsored by the International Association for the Study of Pain (IASP™), the 8th World Congress on Pain will be held Aug. 17 to 22, 1996, in Vancouver. All aspects of acute and chronic pain will be covered, including cancer pain, basic research and clinical management. For information contact: IASP Secretariat, 909 NE 43rd St., Suite 306, Seattle WA 98105, USA. Tel.: 206 547-6409; fax: 206 547-1703; e-mail: IASP@locke.com

**Sino-endoscopy ’96**

Sponsored by the Chinese Ministry of Health and International Health Exchange Center, the International College of Surgeons and Medical Books for China International, the First World Congress of Surgical Endoscopy will be held from Oct. 21 to 24, 1996, at the Beijing International Convention Center, Beijing, China. For further information contact: Dr. Jordan M. Phillips, General chairman, First World Congress of Surgical Endoscopy, 13021 East Florence Ave., Santa Fe Springs CA 90670-4505, USA. Tel.: 310 946-8774 or 800 554-2245; fax: 310 946-0073; e-mail: 102254.3033@compuserve.com

**Spinal cord repair and regeneration symposium**

On Oct. 20 and 21, 1996, the Italian Association for Research on Spinal Cord Lesions will hold an international symposium in Brescia, Italy, on possible repair and palliative treatment of spinal cord lesions. Registration for the symposium is free. For further information contact the Organizing Secretariat, Studio Progress, Via Cattaneo, 51, 25121 Brescia, Italy. Tel.: 39 30 290326; fax: 39 30 40164.

**Magnetic resonance imaging course, Saudi Arabia**

The departments of radiology, medical physics and medical studies of the Riyadh Armed Forces Hospital, Riyadh, Saudi Arabia, will sponsor their fifth international course on magnetic resonance (MR) imaging from Oct. 27 to 30, 1996. The course will provide an overview of MR technology, basic principles and current and future applications of MR imaging in the entire body. Current and potential applications of MR spectroscopy will also be discussed. The program will feature small-group workshops in basic physics and MR applications in the neurologic, musculoskeletal and genitourinary systems. The course chairman is Aabed Al Thagafi. The course fee is SR 1500 for physicians, SR 750 for medical staff in training and SR 400 for technicians. For information contact: Department of Medical Studies, Riyadh Armed Forces Hospital, PO Box 7897, Riyadh 11159, Saudi Arabia. Tel.: 966-1 477 7714, ext. 4933 or 4937; fax: 966-1 476 0853.