Hepatolithiasis with intrahepatic biliary strictures is a challenging problem for surgeons. In geriatric patients, the increased difficulties in treatment are due not only to previous multiple operations for recurrent hepatolithiasis but also to the relevant conditions of old age. We established a systematic approach to treat hepatolithiasis so as to avoid repeated operations and achieve a better outcome. [International Journal of Gerontology 2008; 2(1): 7–11]

Key Words: cholangitis, hepatolithiasis

Introduction

Hepatolithiasis, so-called oriental cholangiohepatitis, is particularly prevalent in Taiwan and other Asian countries. To prevent the immediate or late sequelae of hepatolithiasis, such as suppurative cholangitis, septicemia, secondary biliary cirrhosis with resultant portal hypertension, bleeding varices and hepatic failure, aggressive treatment is needed. The most difficult aspect of treatment is dealing with coexisting intrahepatic biliary stricture, which may limit stone eradication and lead to a propensity for stone recurrence.

Recently, the incidence of new patients with hepatolithiasis has decreased with the years. However, the recurrent patients have relatively increased, especially geriatric ones. The treatment requires that stones be removed completely and bile stasis be eliminated at the stricture sites. In geriatric cases of associated intrahepatic biliary strictures, the treatment becomes much more difficult, and repeated interventions are usually required. Thus, the problems become more complicated because of previous multiple operations and the concern of age.

Hepatic resection is usually preferred to eradicate localized hepatolithiasis with strictures in the one lobe or one segment of the liver because of low surgical mortality and morbidity. However, old age, poor liver reserve from prolonged disease and repeated cholangitis may increase the risks from a major operation. Nonsurgical management, i.e., percutaneous stricture dilation (PSD) and subsequent percutaneous transhepatic cholangioscopic lithotomy (PTCSL), has become the mainstay of treatment for recurrent or residual hepatolithiasis, because extensive adhesions, distortion of the normal anatomy, and scarring of the choledochus from previous operations make repeated surgical procedures difficult.

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Definite Diagnosis by Imaging Studies

Clinical symptoms and signs of acute or chronic cholangitis usually raise the suspicion of hepatolithiasis. In geriatric patients, poor communication and atypical
clinical presentation are the common reasons of delayed diagnosis. Ultrasound, which is noninvasive, is suggested first. Computed tomography may accurately establish a diagnosis, define the stone, and exclude the other liver lesions. Cholangiography is necessary to clearly localize the stones and the possible associated intrahepatic biliary strictures. There are three options of cholangiography. Endoscopic retrograde cholangiopancreatography (ERCP) is good in the localization of the stone or stricture, but to perform endoscopy is usually refused by and sometimes difficult in these geriatric patients. Those with a history of gastrectomy with Billroth II anastomosis may need to avoid ERCP. Instead, magnetic resonance cholangiopancreatography (MRCP) may replace ERCP for the geriatric patient. Percutaneous transhepatic cholangiography (PTC) is selectively indicated in those who have acute obstructive suppurative cholangitis. Addition of the drainage procedure, percutaneous transhepatic cholangiography drainage (PTCD), may decompress the bile duct in jaundice and drain the infected bile. Those patients who receive PTCD may plan to receive PTCSL therapy to avoid repeated major surgery.

Exclusion Criteria

The geriatric patients to be excluded in the systematic stepwise approach include those with: (1) other severe medical illnesses that limit the stone treatment; (2) liver cirrhosis with poor liver reserve; (3) coexisting malignancy diagnosed before or during the stone treatment; and (4) disagreement to treatment. For those with exclusion criteria, only symptomatic treatment with parenteral use of strong antibiotics, fluid and electrolyte balance, and supportive care are suggested.

Systematic Stepwise Management of Hepatolithiasis with Intrahepatic Biliary Strictures in Geriatric Patients

For geriatric patients with one lobe or bilateral hepatolithiasis with biliary strictures, we usually adhere to the following systematic stepwise approach:

1. Emergency percutaneous transhepatic biliary drainage (PTBD; the same as PTCD) is performed for those patients with acute obstructive suppurative cholangitis. PTC is performed 1 to 2 weeks later to demonstrate clearly the whole biliary tree and the stone location, followed by elective surgery (for those with low surgical risk) or PTCSL (for those with high surgical risk).

2. For those with chronic or subacute cholangitis, MRCP may be considered to replace ERCP.

3. For those who are at low risk after preoperative assessment by anesthesiologists, surgery may be undertaken. The routine operative procedures consist of cholecystectomy (if the gallbladder is present), extended choledocholithotomy, intraoperative cholangioscopic lithotomy, and T-tube placement within the common bile duct. The feasibility of left partial hepatectomy depends on the geriatric patient’s liver function and the general condition. After liver resection, the retained medial segment stones or hilar stones are removed as completely as possible from the open left hepatic duct stump. The left duct stump is then closed using Dexon (Davis & Geck, Gosport, UK) 3-0 suture. Left lobectomy is undertaken in those patients whose medial bile duct is too stenotic and angulated. T-tube cholangiography for the study of any residual stones and cholangioscopic lithotomy through the T-tube tract (beginning 10 to 14 days after surgery) are undertaken postoperatively. Balloon dilatation at least 3 to 4 weeks after surgery is performed for intrahepatic biliary strictures. For those with strictures near the common hepatic duct, we use a balloon catheter through the T-tube tract under fluoroscopic guidance or, in selected cases, through a cholangioscope to dilate the strictures before stone clearance.

4. After successful dilatation of the stricture and cholangioscopic lithotomy, repeated selective cholangiography and cholangioscopy are performed to evaluate the results of stone clearance and biliary dilatation.

5. The geriatric patients who are at high risk for major surgery after preoperative assessment, nonsurgical PSD and subsequent PTCSL are indicated.

6. The PTBD route either has already existed (if the patient has received preoperative biliary decompression) or is established at this time. About 7 days later, the tract is dilated from 16F to 24F in one session under sedation or short-time general anesthesia, usually by means of an Amplatz renal dilator (Wilson-Cook Medical Inc., Bloomington, IN, USA). Dilatation of the intrahepatic biliary stricture is
performed with the Dotter angioplasty balloon dilator (Wilson-Cook Medical Inc., Bloomington, IN, USA). The balloon used is most often 6 to 8 mm in diameter and 4 cm in length. In some difficult cases, double-balloon dilatation is necessary to obtain an adequate diameter for the stenotic duct. A modified method of one session for tract and stricture dilatation minimizes the patients’ suffering and complication and is used as a routine to replace the conventional methods of multiple sessions. Stone extraction is simultaneously or subsequently undertaken using basket catheters, biliary spoons or biliary forceps during repeated dilatations. For the large impacted stone, electrohydraulic lithotripsy through the cholangioscope is used to fragment the stone before extraction by the basket catheter.

7. For selected cases with a long-segment stricture (≥1.5 cm), a biliary stent is applied using a silastic internal–external biliary stent catheter (Cliny cholangioenterotube, Create Medic, Yokohama, Japan) of 8F to 12F in diameter. Bilateral stents are placed in some patients who have bilateral biliary stricture without resection of the left side. These soft stents are inserted and changed fluoroscopically (if they are malpositioned or blocked) with the aid of a guide wire, and the cap on the external end of the stenting catheter is closed. The stents are not flushed regularly unless they are blocked. After retention for 6 months or more and when an improvement in the diameter of the strictured ducts has been demonstrated by serial cholangiography and cholangioscopy, the stent is removed. If the diameter of the ducts does not increase after stenting, the stricture is redilated and subsequently restented. If the stents become blocked, the external cap is opened to establish an external biliary decompression, and the stents are flushed with normal saline solution.

8. Those patients in whom there is no improvement in the stricture after more than 6 months’ internal–external stenting may receive an internal stent by transhepatic placement of a modified Gianturco-Rosch expandable wire Z-stent (Wilson-Cook Medical Inc., Bloomington, IN, USA). When cholangiocarcinoma is suspected during cholangioscopy, cholangioscopic biopsy is performed. If carcinoma is confirmed pathologically, our dilatation therapy will be discontinued. Some geriatric patients’ treatments are discontinued because of their poor compliance. For them, controlling the cholangitis with antibiotics is the only feasible treatment.

The complications of both surgery and dilatation procedures are assessed in detail. The postoperative 1-month morbidity is evaluated, and the reasons for termination of treatment are also reviewed.

Follow-up After Treatment

After treatment, all patients are followed up regularly at our outpatient clinic with clinical assessment by periodic abdominal ultrasonography (every 3 to 4 months in the first 3 years and every 6 months thereafter) to detect the recurrence of any stone. Follow-up computed tomography scan and MRCP, and PTC if necessary, are undertaken if cholangitis recurs or stone recurrence is suspected by ultrasonography.

Discussion

PSD and PTCSL may become the mainstay therapy for geriatric patients, especially when the hepatolithiasis is residual or recurrent, their age is over 80, or they are at poor surgical risk. From our previous studies, the main reasons for termination of treatment include poor compliance, coexisting liver cirrhosis especially secondary biliary cirrhosis resulting from prolonged hepatolithiasis, vascular complication in PSD, difficult locations of stones or strictures, and the detection of associated intrahepatic cholangiocarcinoma. The procedural morbidity may be decreased as low as possible and mortality may achieve near zero, if the assessment is meticulous and performance of the procedure is careful following a systematic stepwise approach.

References


