

Surgical strategies for unexpected gallbladder carcinoma

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Abstract. – **OBJECTIVE:** To explore surgical strategies for unexpected gallbladder carcinoma (UGC).

PATIENTS AND METHODS: A study of hospital records was performed in 26 patients with UGC treated in our institution from January 1990 to December 2002. The surgical therapies and disease prognosis were analyzed.

RESULTS: Five cases of GBC were noted during open cholecystectomy (OC) and 15 were confirmed during minicholecystectomy (MC), while were 6 identified during laparoscopic (LC) surgery; all patients with Nevin Stage I gallbladder carcinoma (GBC) survived > 3 years; patients with Stage III GBC died within 2 years and patients with Stage IV GBC died within 1 year.

CONCLUSIONS: Caution must be taken when high risk conditions and atypical ultrasonography of gallbladder are encountered. Examination of frozen sections should be performed routinely in all cases to reduce the rates of misdiagnosis. Surgery is an effective treatment for GBC.

Key Words:

Gallbladder neoplasms, Unexpected gallbladder carcinoma, Surgical strategy.

Patients and Methods

Patients

Between January 1990 and December 2002, 26 patients (19 women, 7 men) with median age of 56.7 years (range 27-81 years) admitted to our institution were included in the study. Patients presented with recurrent right upper abdominal pain or discomfort (n=21), mild jaundice (n=3) and fever (n=2) with a time course ranging from 3 months to 19 years.

Echography

Gray-scale ultrasound imaging was performed with Diasonic Spectra II ultrasound scanner and an HP SONOS 5500 ultrasound system. Colour Doppler flow imaging was obtained using a colour Doppler ultrasound scanner with 3.5 MHZ transducers. Patients underwent ultrasound examination after fasting for 8-12 hours. Examination was performed with patients in supine, left lateral decubitus, right anterior oblique and knee-chest position. Half sitting or sitting position was required if necessary. Longitudinal scans at right hypochondrium and oblique scans at right intercostal space were made to investigate the size, shape, wall of gallbladder (GB) and echoes from GB lumen.

Introduction

The diagnosis of gallbladder carcinoma (GBC) is difficult due to the lack of reliable diagnostic methods and specific clinical features, which has led to significant increase in the incidence of unexpected gallbladder carcinoma (UGC). UGC is defined as the cases of GBC identified during or after the surgical procedure of removing the gallbladder in benign conditions. Here, we report a retrospective study of records of 26 UGC patients.

Results

Imaging Findings

The ultrasound imaging results indicated GB stones in 19 patients (8 patients with a stone diameter of >3.0 cm), enlarged GB in 9, thickened GB wall in 15, GB atrophy in 2, polyps in 8; (6 patients with solitary polyp, 5 patients with polyps of size >1.0 cm), uneven echoes from GB wall in 8 and floc echo without acoustic shadowing from GB lumen in 9 patients.

Histopathological Findings

Histopathological features of UGC were confirmed with the study of frozen-sections of GB and the results demonstrated highly differentiated adenocarcinomas in 12 patients, moderately differentiated adenocarcinoma in 7, poorly differentiated adenocarcinoma in 4, squamous cell carcinoma in 2 and sarcoma in 1. The carcinoma was classified using Nevin staging system, indicating stage I tumor (n= 11), stage II (n=10), stage III (n= 3) and stage IV (n= 2).

Surgical Strategies and Outcomes

Simple cholecystectomy (CE) was performed in 12 patients, CE with lymphadenectomy in 6, CE with hepatic wedge resection and lymphadenectomy in 5 and CE with lymphadenectomy and hepatico-jejunostomy in 3. Three patients underwent secondary procedures. Postoperative complications included bile leakage in 1 patients, incision infection in 3 and pulmonary infection in 1. One patient died within 6 months postoperatively, one within one year postoperatively, one within 2 years postoperatively, one within 3 years postoperatively and the rest 21 patients survived > 3 years. Of the 6 patients who underwent laparoscopic cholecystectomy (LC), 2 patients died within 3 years postoperatively due to recurrent cancer resulted from lymphatic metastasis; the rest of patients survived > 3 years. Of the 2 patients who didn't receive a secondary surgery, one patient was confirmed with carcinoma at the neck of GB and died of tumor recurrence within one year postoperatively; the other patient confirmed with GB carcinoma on the surface of liver died within 2 years postoperatively.

Discussion

GBC is highly malignant tumor with poor prognosis. Its early diagnosis is difficult and chance of cure is rare. Overall 5 year survival of GBC ranges from 2%-5% and more than 80% patients died within one year postoperatively¹. Patients identified with UGC were usually at the early stage of the disease and achieved high survival rate after receiving appropriate surgical therapy, as was presented in the study with 21 patients surviving more than 3 years. The etiology of GBC is still not clearly identified, however, several high risk conditions for GBC are recognized, including high risk sexual behavior, obesity, age, typhoid carriers, biliary confluence ab-

normality, porcelain gallbladder, gallbladder atrophy or significant thickening of gallbladder wall, calcification of gallbladder wall, large solitary sessile polyps, gallbladder adenomyosis and long history of gallbladder stone, particularly with a time course of > 5 years. In the present study, most patients were elderly women and 73.08% patients were accompanied with gallbladder stones with diameter > 3.0 cm in 8 patients. Ultrasonography revealed gallbladder wall thickening in 15 patients, intraluminal tumor in 8, enlarged gallbladder with absence of normal fluid filled cavity in 9, polyps in 8 with diameter >1.0 cm in 5. Retrospective study discovered that echography of UGC was correlated with the ultrasound imaging of GBC. Enhancing the recognition of these atypical imaging findings helps to identify UGC².

Rational decisions about therapeutic strategies play an important role in the treatment of UGC and intraoperative diagnosis is closely associated with timely treatment and prognosis of the disease. UGC that has already invaded serosa or metastasized is easily identify during surgery; however, precautions have to be taken when the following abnormal conditions are encountered: (1) gallbladder wall is thickened, or stiff with uneven surface and pale in color; (2) miliary nodules are found on the surface of liver especially in IV, V, and VII segment or in peritoneum; (3) enlarged lymph nodes were found around hilum of liver and common bile duct; (4) GB atrophy and closely attached to liver; (5) intraluminal nodules, mass or local GB wall thickening; (6) twisted mucosa with irregular projections, erosion, local paillary mass and necrotic tissues were found in GB lumen; (7) intraluminal bleeding and blood clot fount in GB lumen. Routine GB dissection is required after removal of GB to investigate the conditions of serosa and mucosa. Meanwhile, histopathological study of GB together with suspected lymph nodes is also suggested to facilitate decisions on further surgical strategies. In the present study, 3 patients received secondary surgery, LC in 2 and minilaparotomy cholecystectomy (MC) in 1. Intraoperative histopathological examination were not conducted in these 3 patients but were performed in the remaining 23 patients, allowing the adjustment of surgical strategy³. Accidental opening of GB and tumors should be avoided to prevent the seeding and dissemination of cancer cells. For early stage GBC that is located in the anterior GB wall without invasion to the surrounding or-

gans and regardless of invasion into entire GB wall, simple cholecystectomy is sufficient; for same stage GBC which is located at GB fundus facing liver, once invasion into muscular layer is observed, wedge liver resection (including liver tissues 2.0 cm around GB) and lymph node dissection are required on top of cholecystectomy, because the rich lateral lymphatic circulation in this region easily leads to metastasis of cancer cells; in cases where the tumor is located at the neck or ampulla, invasion into bile duct is difficult to be recognized. Therefore, bile duct resection, Roux-en-Y biliary-jejunal anastomoses and lymphadenectomy are recommended; ablation liver tissue using argon or electrical coagulation during wedge liver resection can reduce bleeding and prevent the occurrence of bile leakage, thus inactivating residual cancer cells. Rinsing wound with DDP can diminish the possibility of shedding of tumor cells, reducing the occurrence of cancer cell seeding. Caution has to be taken to facilitate tumor-free manipulation during LC. Once GBC is confirmed intraoperatively, open surgical procedure is recommended. In addition, peritoneum around incisions should be removed to avoid secondary surgery. In this study, 2 patients (GBC at GB neck in 1 and GBC facing liver in 1) who underwent LC didn't receive secondary surgery. Both of them had recurrent cancer within 2 years postoperatively.

GBC spreads through bile duct, lymphatic, vascular and neural pathway, rapidly invading adjacent tissues and organs. Since GBC of GB neck is located close to Calot's triangle, lymphatic metastasis occurs earlier. Therefore, when treating GB neck cancer, regardless of the depth of invasion, lymphadenectomy around he-

patodoudenal ligament is required. Secondary radical surgery is recommended for GBC with a positive involvement of the cystic margins or positive biopsy of lymph node at Calot's triangle⁴.

Conclusions

Preoperative examination should be enforced and vigilance for GBC should be improved in the diagnosis of UGC. When managing UGC by surgery, surgical exploration and routine frozen-section biopsy of GB should be performed to confirm diagnosis to avoid secondary operation and avoid the delay of treatment.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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