Successful Radical Surgery for an Undifferentiated Gallbladder Carcinoma with Lymph Node Metastases to the Mesocolon

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We report successful radical systematic surgery for an undifferentiated gallbladder carcinoma with metastasis to the mesocolonic lymph nodes. The patient, a 70-year-old woman, was admitted with abdominal fullness and appetite loss. Imaging modalities revealed a 10-cm tumor originating from the gallbladder and infiltrating both the liver and transverse colon. As multiple mesocolonic lymph node metastasis was confirmed on laparotomy, right hemicolectomy with systematic lymph node dissection (D3 resection) was performed, in addition to extended cholecystectomy with partial resection of segments 4, 5, and 6 of the liver and distal gastrectomy. Histologically, the tumor was diagnosed as an undifferentiated carcinoma, and metastases were indentified in the mesocolonic lymph nodes (17/50 nodes) but not in the peri-gallbladder lymph nodes (0/16 nodes). The patient has been recurrence-free for 4 years after the operation. This case illustrates that even if gallbladder cancer infiltrates into adjacent organs with regional lymph node metastasis, it is of value to perform radical surgery with systematic lymph node dissection for the involved organs.

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Introduction

Curative treatment for advanced gallbladder cancer is considered to be difficult because of the high degree of cancer malignancy and its invasion of neighboring organs and/or distant metastasis. Numerous authors have commented on the correlation between survival with the extent of disease. Henson et al. reported that in patients with direct cancer extension to adjacent organs such as the liver, colon, duodenum and pancreas, the 2-year survival rate and median survival were only 4% and 4 months, respectively, among 3038 patients recorded in the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute in the USA. To improve resectability, extended hepatectomy has been advocated in patients with infiltration into the liver. However, for treatment of gastrointestinal involvement, radical resection with adequate lymph node dissection has not yet been reported. Herein we report successful radical surgery, including extended cholecystectomy with hepatectomy and right hemicolecctomy followed by mesocolonic lymph node dissection (D3 resection), for undifferentiated carcinoma of the gallbladder predominantly infiltrating the nodes of the transverse mesocolon.

Case Report

A 70-year-old woman was admitted with complaints of abdominal fullness and appetite loss. Physical examination disclosed a palpable mass in the right subcostal region. Laboratory data on admission were found to be within normal limits, the tumor marker levels being AFP 5.1 ng/ml, CEA 2.6 ng/ml and CA 19-9 51 U/ml. Ultrasonography demonstrated a mass and stones in the gallbladder, which was almost entirely replaced by a tumor
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10 cm in diameter. A barium enema study showed extrinsic compression with stenosis in the transverse colon (Fig. 1). On computed tomography, the tumor was found to infiltrate segments 4 and 5 of the liver and the transverse colon at the right flexure (Fig. 2). Angiography showed that the feeding arterial branches of the tumor arose from the right colic artery, the cystic artery and the right hepatic arterial branch.

On laparotomy, the tumor was found to originate mainly from the fundic portion of the gallbladder and to infiltrate segments 4, 5 and 6 of the liver as well as the transverse colon. Multiple mesocolonic lymph nodes were markedly swollen, suggesting metastasis.

First, right hemicolectomy was performed with systematic mesocolonic lymph node dissection up to the root of the superior mesenteric artery and vein (D3 resection). After distal gastrectomy including the first portion of the duodenum to dissect the tumor adhesion to the stomach, the common bile duct was resected on the suprapancreatic side and the peri-gallbladder lymph nodes (Nos. 12-13) were dissected. Lymph node dissection was then advanced to the region of the common hepatic artery (No. 8) and celiac axis (No. 9). Finally, extended cholecystectomy and partial resection of segments 4, 5 and 6 of the liver, leaving a 3-cm tumor-free margin, was performed, and the tumor was removed en bloc with the common bile duct, distal portion of the stomach and the right part of the colon. Reconstruction was performed by ileocolostomy (end-to-end), gastro-duodenostomy (end-to-end), and antecolic choledocho-jejunostomy (end-to-side) anastomoses using the Roux-en-Y procedure (Fig. 3).

Microscopic examination showed that the tumor had proliferated in a medullary pattern, and no glandular structures were found. The tumor cells had various degrees of cytoplasmic eosinophilia and the nuclei were atypical, bizarre and hyperchromatic (Fig. 4a). Furthermore, as the cells were immunohistochemically positive for keratin (Fig. 4b), the tumor was considered to be of epithelial cell origin and diagnosed as a pleomorphic undifferentiated carcinoma of the gallbladder. The tumor was found to have invaded the transverse colon and liver, although it merely adhered to the stomach and duodenum. Seventeen lymph nodes were positive for cancer metastasis in the mesocolon among a total of 50 nodes dissected. No peri-gallbladder lymph node metastasis was present in the 16 nodes around the hepatoduodenal ligament.

The postoperative course was uneventful and adjuvant postoperative therapy was not added. At 4 years after the operation, the patient is doing well with no cancer recurrence.

Discussion

Generally, for surgical treatment of gastrointestinal involvement in patients with gallbladder cancer, partial resection of the gastrointestinal tract is ordinarily performed without systematic lymph node dissection for the involved organs. On the other
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(a) (b)

Fig. 3. Schema of the operation. (a) Pre-operation. (b) Post-operation. Solid circles indicate positive metastases in the mesocolonic lymph nodes.

Fig. 4. Histologic findings. (a) Proliferation of the pleomorphic tumor cells is evident (H & E). (b) Keratin-positive cells in a lymph node metastasis (immunohistochemical staining for keratin).

hand, our experience with the present case showed that lymph node metastases were present only in the mesocolonic area, and not in the peri-gallbladder area, and that simple resection of the involved part of the transverse colon might have been insufficient for curative therapy. Once the tumor had infiltrated to the transverse colon, it might have spread with lymphatic flow along the mesenteric artery. Therefore, the complete removal of this tumor required radical surgery with peri-gallbladder and mesocolonic lymph node dissection, as undertaken for both advanced gallbladder and colon cancer. We believe that this operative procedure allowed the patient to remain disease-free for 4 years after surgery. However, it is unclear whether surgery as radical as D3 right hemicolec-
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my is suitable for all gallbladder carcinomas with gastrointestinal involvement. In this case, although the tumor adhered to the stomach, systematic radical surgery for the stomach was not performed because of the lack of peri-gastric lymph node metastasis or tumor infiltration of the stomach. If radical surgery for the stomach in addition to that for the gallbladder and transverse colon had been performed, the surgical border on the patient would have been increased to such an extent as to present a risk of postoperative mortality. We consider it necessary to take into account the morbidity and mortality associated with radical surgery for involved organs in each individual case.

From a histologic viewpoint, this type of tumor warrants comment. Although most gallbladder cancers are adenocarcinomas with various degrees of differentiation, undifferentiated carcinomas account for about 10.9% of all primary gallbladder cancers seen at autopsy.1,8) Undifferentiated gallbladder carcinoma has been reported to have a poor prognosis,9 the survival rate at 1 year after surgery being only 18%, which is significantly lower than that for differentiated carcinoma, and long-term survival is rare.10) Although the tumor in this case showed a unique mode of spread, our experience indicates the possibility of a favorable prognosis if undifferentiated gallbladder carcinoma is completely resected.

To offer a chance of long-term survival, surgeons should bear in mind the possibility that some case of gallbladder carcinoma with gastrointestinal involvement may be curable by radical surgery.

References

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