

Radical surgery for advanced pure squamous cell carcinoma of the gallbladder:

report of a case

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Running head: Radical surgery for pure GB squamous carcinoma

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Abbreviations: Squamous cell carcinoma (SCC); computed tomography (CT);

Endoscopic retrograde cholangiopancreatography (ERCP)

Abstract

Squamous cell carcinoma (SCC) of the gallbladder is frequently detected at an advanced stage because of its tendency to infiltrate adjacent organs. In addition, more rapid growth of this type of carcinoma compared to that of adenocarcinoma, the most frequent subtype of gallbladder carcinoma, has been reported. Although it is not rare to find squamous cell carcinoma components in cases other than the usual adenocarcinoma of the gallbladder, these cases must be distinguished from those of pure squamous cell carcinoma, as diagnosed in the present case. Pure squamous cell carcinoma is characterized by a well-localized growth, no visceral metastasis, and a rarity or lack of lymph node metastasis, even when the tumor has grown to a large size locally. Prognosis of SCC of the gallbladder has generally been considered poor. Nevertheless, long-term survival after curative resection in patients with SCC of the gallbladder has been sporadically reported. We performed extended right hemihepatectomy with portal vein resection after portal vein embolization for a 55-year-old woman with advanced SCC of the gallbladder. The patient has not developed any signs of recurrence 40 months after the surgery. Although such radical surgery remains challenging, it may

lead to a favorable outcome in selected patients with advanced SCC of the gallbladder.

Introduction

Squamous cell carcinoma (SCC) is a rare histopathologic subtype of gallbladder cancer. The incidence of gallbladder carcinoma containing squamous cell carcinoma components (SCC or adenosquamous cell carcinoma) accounts for an estimated 2-10% of the total incidence of gallbladder malignancies (1, 2). The prognosis of SCC of the gallbladder has generally been considered poor, while long-term survival after curative resection including radical surgery has also been sporadically reported. To date, an optimal therapeutic strategy for SCC of the gallbladder has not been established because of the rarity of this type of carcinoma. Herein we describe a patient with advanced SCC of the gallbladder who underwent extended right hemihepatectomy with portal vein resection after portal vein embolization.

Case report

A 52 year-old woman was referred for further examination for jaundice with an obstructive pattern. Laboratory findings on admission were as follows: total bilirubin 7.8 mg/dl, direct bilirubin 5.0 mg/dl, alkaline phosphatase 1,502 IU/l, gamma glutamyl transpeptidase 701 IU/l, CEA 2.4 ng/ml, and CA19-9 701.5 U/ml. Contrast-enhanced

computed tomography (CT) of the abdomen showed a tumorous lesion in the gallbladder and a dilatation of the intrahepatic bile duct. The tumorous lesion seemed to originate from the gallbladder, and tumor infiltration to the liver was also suspected (**Figure 1A**). In addition, CT showed a narrowing in the right branch of the portal vein, which seemed to be compressed by the tumor (**Figure 1B**). Endoscopic retrograde cholangiopancreatography (ERCP) revealed a stenotic common bile duct and morphological irregularity in the distal portion of the left hepatic duct (**Figure 2**). Cytology of bile obtained at the time of ERCP did not show any malignant cells, but keratinized cells were seen.

Taken together, the results suggested that the tumorous lesion was a gallbladder carcinoma that had infiltrated into the liver and the bile duct. In planning the radical resection, extended right hemihepatectomy with extrahepatic bile duct resection was considered to be the most adaptable procedure because of the suspicion of tumor invasion into the left hepatic duct. The volume of the lateral segment of the liver expected to be the remnant liver was calculated to be 349 ml by CT volumetry, which was equivalent to 20.5% of the whole liver volume. Since the planned hepatic resection

was considered to carry a high risk in terms of the estimated remnant liver volume, percutaneous transhepatic embolization of the right branch of the portal vein was performed. CT volumetry 2 weeks after the portal vein embolization revealed an increase in the lateral segment from 349 ml to 478 ml, which was equivalent to 28.0% of the whole liver. We also evaluated functional volume using ^{99m}Tc-GSA scintigraphy, which showed 38.0% function of the whole liver in the lateral segment. Subsequently, the patient underwent extended right hemihepatectomy, extrahepatic bile duct resection, and dissection of the portal lymph nodes. To retain a sufficient remnant liver volume, segment IVa was preserved. Since the tumorous lesion was located close to the bifurcation of the portal vein, portal vein resection was also performed due to suspected tumor infiltration. Reconstruction of the portal vein was achieved by end-to-end anastomosis between the left portal vein and the trunk using running sutures with 5-0 polypropylene. The postoperative course was uneventful, and there were no complications related to the portal vein reconstruction. The resected specimen showed histopathological features of squamous carcinoma of the gallbladder (**Figure 3**). The specimen did not include any adenocarcinomatous components. The tumor had

infiltrated into the liver and bile duct. Metastasis to a lymph node along the common bile duct was also detected.

According to the general guidelines from the Japanese Society of Biliary Surgery for surgical and pathological studies of biliary tract cancer (3), the pathological staging was determined to be stage IVa (positive direct invasion to the liver and the bile duct; ss, pHinf3, pBinf3, pPV0, pN1, pBM0, pHM0). The TNM staging according to the American Joint Committee on Cancer (AJCC) staging system was determined to be IIb (T3, N1, M0).

At the time of the writing of this report, i.e., 40 months after the surgery, the patient showed no signs of recurrence.

Discussion

SCC is a rare subtype of gallbladder carcinoma (1, 2). SCC of the gallbladder is prone to present with a bulky tumor and adjacent organ involvement; hence, this type of cancer is frequently diagnosed at an advanced stage (4). In addition, squamous cell components have been reported to have greater proliferation capacity compared to that of the glandular component, which is a frequently seen component of adenocarcinoma (2, 5). As a result, SCC of the gallbladder has generally been considered to be more aggressive and to be associated with a poorer prognosis than adenocarcinoma. On the other hand, pure squamous cell carcinoma is also characterized by a well-localized growth, no visceral metastasis, and rare or total lack of lymph node metastasis, even in cases in which the tumor has grown to a large size locally. Although it is not unusual to find portions of squamous cell carcinoma in tumor types other than the more typical context of an adenocarcinoma of the gallbladder, such cases must be differentiated from those of pure squamous cell carcinoma, which was diagnosed in the present case.

Some authors have reported long-term survival in the patients with SCC of the gallbladder after radical surgery (9, 10). It is considered advantageous to recognize any

differences in clinical course and biological behavior among histopathological types of gallbladder carcinoma in order to establish appropriate therapeutic strategies. Although preoperative histological diagnosis is difficult, the presence of keratinized cells in the bile, found in the present case, may be suggestive of SCC (11).

Hepatectomy with portal vein resection and reconstruction have been previously reported to accomplish curative resection of portal vein-invasive advanced gallbladder carcinoma. However, the efficacy of such aggressive surgery for advanced gallbladder carcinoma remains controversial. Shimada *et al.* reported that hepatectomy with vascular reconstruction is not recommended for advanced gallbladder carcinoma (9). However, there are no studies in the literature regarding the efficacy of vascular reconstruction that take into account histological type. Although it remains difficult to evaluate the efficacy of portal vein resection for SCC of the gallbladder because of its rarity, portal vein resection appears to be a reasonable option for achieving curative resection with respect to the lower metastatic potential of this type of carcinoma, despite its tendency toward direct invasion. In the present case, the microscopic findings did not reveal any invasion of the tumor into the portal vein; however, portal vein resection was

considered to be an appropriate procedure to ensure a curative resection.

To date, long-term survival has not been reported in patients with SCC of the gallbladder who also had lymph nodal metastasis. Although the present case showed no signs of recurrence 40 months after surgery, it remains necessary to evaluate the long-term efficacy of radical surgery in patients with SCC-type gallbladder carcinoma with lymph nodal metastasis.

In conclusion, even at advanced stage, radical surgery might lead to improved survival and prolonged life expectancy in patients with SCC of the gallbladder. Further studies will be needed to determine an optimal therapeutic strategy for advanced SCC of the gallbladder.

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carcinoma of the hilar bile duct and gallbladder. *World J Surg.* 2003;10:1137-42.

Figure legends

Figure 1A

Contrast-enhanced abdominal CT scan findings were suggestive of tumor infiltration into the liver.

Figure 1B

Reconstructed image from contrast-enhanced CT of the portal vein revealed a narrowing of the right branch of the portal vein, which might have been compressed by the tumor.

Figure 2

Biliary stent placement under endoscopic retrograde cholangiography. A stenotic lesion was seen in the common bile duct, with suspected tumor infiltration into the left bile duct.

Figure 3

The tumor presented with a squamous appearance microscopically, with intercellular bridges and prominent keratinization. Figure 1A

Figure 1A



Figure 1B

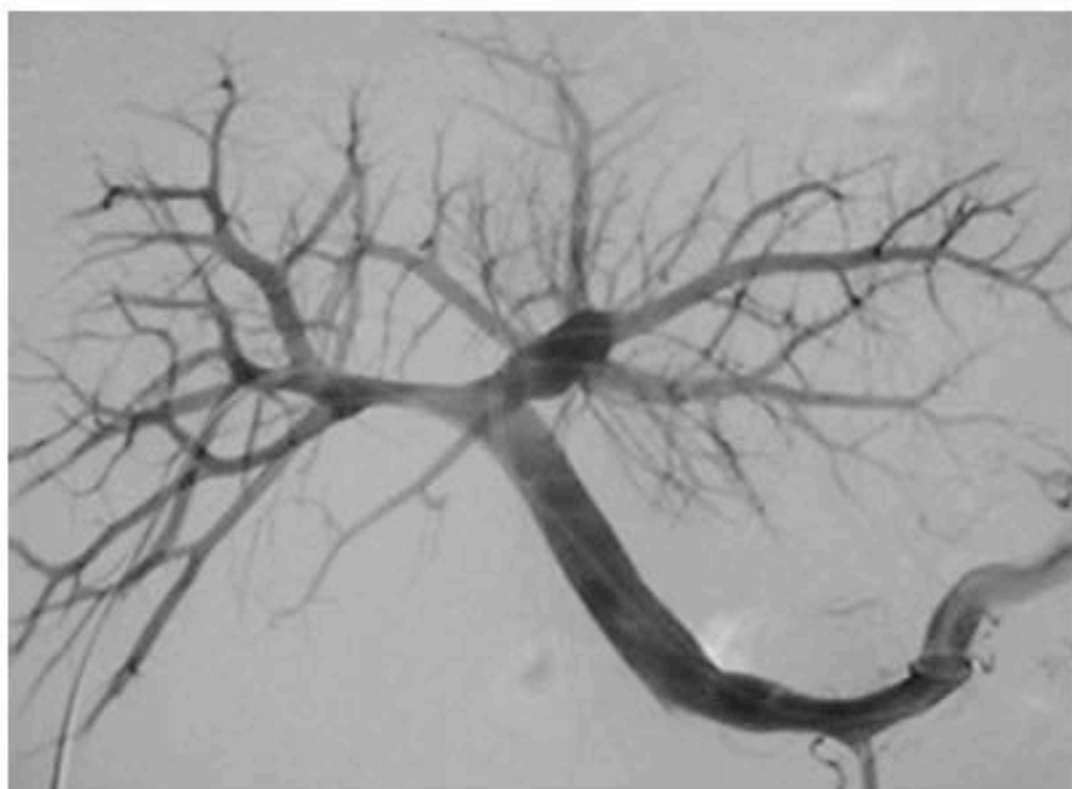


Figure 2

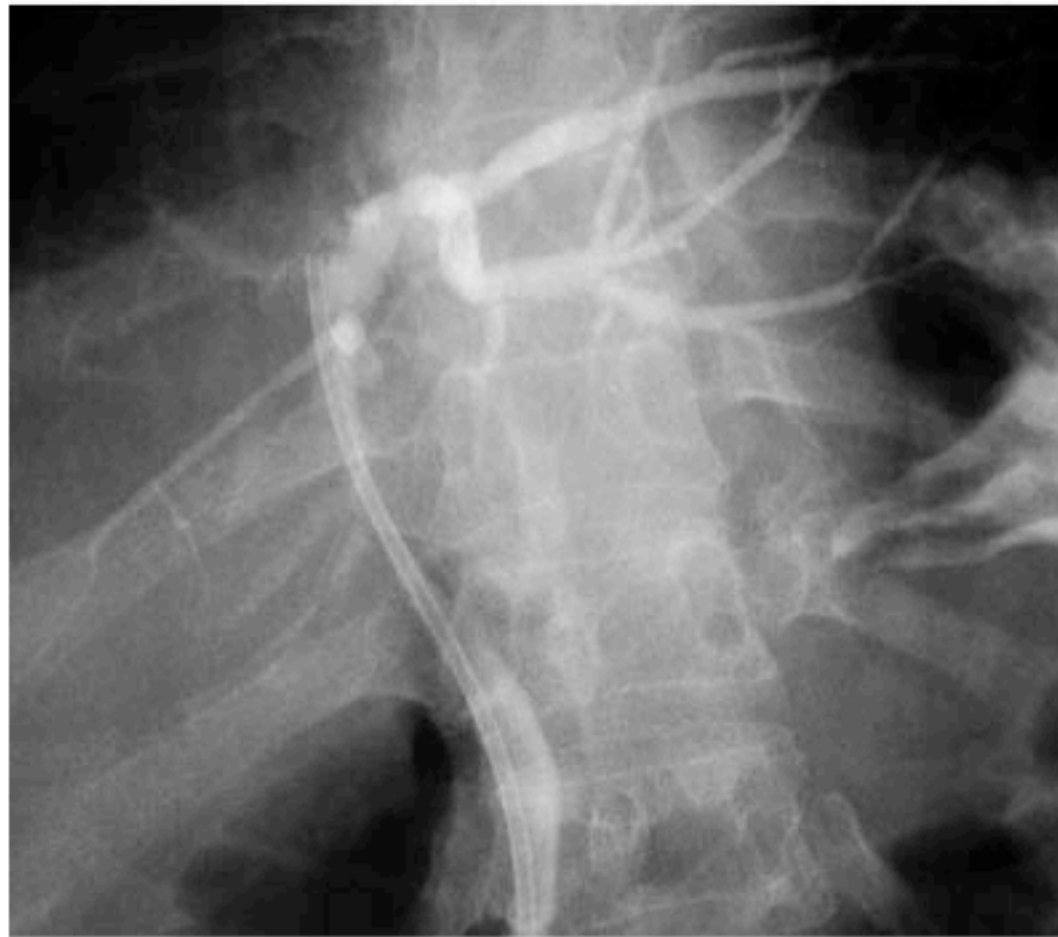


Figure 3

