RESEARCH COMMUNICATION

Major Hepatic Resection for Hilar Cholangiocarcinoma without Preoperative Biliary Drainage

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Abstract

Hilar cholangiocarcinoma is a rare cancer in western countries but very high incidence in the northeast of Thailand. The only chance to cure is surgical resection. Preoperative biliary drainage (PBD) for improving liver function to decrease perioperative morbidity and mortality is claimed to be beneficial. To determine whether liver resection with hilar resection is a safe procedure in obstructive jaundice patients caused by hilar cholangiocarcinoma, the records of 30 consecutive patients undergoing surgery between May 1999 and May 2002 at Srinagarind hospital, Khon Kaen University, were retrospectively analyzed. Two patients died during hospitalization, an operative mortality of 6.7%. Survival was 33% at 1 year, 12% at 2 years,10% at 3 years and 6.7% at 4 years. In our experience, it is safe in most patients with obstructive jaundice due to hilar cholangiocarcinoma to perform liver resection without preoperative biliary drainage (PBD).

Key Words: Hilar cholangiocellular carcinoma - surgical resection - preoperative biliary drainage

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Introduction

Cholangiocarcinoma is a very common cancer in northeast region of Thailand (Khuhaprema et al., 2007). It is the second most frequent primary neoplasm of the liver and its incidence is increasing in Western countries (Green et al., 1991; Carriaga et al., 1995; Khuhaprema et al. 1999; Suzuki et al., 2000). These tumors arise from the biliary tract and can be categorized according to their anatomical location into intrahepatic and extrahepatic. Hilar cholangiocarcinoma is defined as a tumor with involvement of the common hepatic bile duct, at the confluence and right and left hepatic bile duct. Patients usually present very late and therefore the prognosis of the disease is poor.

Surgery remains the keystone treatment. Although resection of hilar cholangiocarcinoma usually requires difficult surgical manipulation, it is the only therapeutic modality allowing a permanent cure or a desirable prognosis. The preoperative placement of stents facilitates surgical management, as well as decompressing the obstructed biliary tree, but the role of preoperative biliary drainage (PBD) prior to hepatic resection in the presence of obstructive jaundice remains controversial. In this paper we document our own experience with surgical treatment for hilar cholangiocarcinoma without PBD.

Materials and Methods

This study concerned 30 consecutive patients with hilar cholangiocarcinomas with obstructive jaundice who underwent major hepatic resection without PBD during May 1,1999 and May 31,2002 at Srinagarind Hospital, the teaching hospital at Khon Kaen University, Thailand. All subjects were followed-up until the end of their life to evaluate postoperative complications and overall prognosis after resection.

Results

There were 21 male and 9 female patients. The average age was 53±6.1 years and the duration of jaundice was 5.5±5.3 (1-22) weeks. The distribution of staging was: C/S, 1 (3.3%), I-II, 0. III 3 (10%), IVa, 20 (66.7%) and IVb, 6 (20%). The preoperative and postoperative laboratory and liver functions are shown in Table 1. Types of operative procedures are shown in Table 2.

Most of the patients in this report were late presentation and high preoperative bilirubin level. Even all of the patients undervent major hepatic resection and hilar rsection which was major operation, postoperative liver functions were close to normal level at day 7 (Tables 2-3). The albumin level was quite low, but most of the patients did not need albumin supplementation and its level was normal in a month. Total bilirubin level was gradually decreased to normal in 4 to 6 weeks. Post-operative complications were encountered in 23 of the total of 30 patients.

Discussion

The results of the present study indicate that major

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liver resection in malignant jaundice patients does not effect the liver functions in immediate postoperative period.

The advantages of PBD before liver resection include improvement of surgical conditions by increasing the tolerance of cholestatic liver to ischemia and decreasing blood loss, and reduction of morbidity and mortality.In our report,the tolerance of hepatic ischemia was assessed by the postoperative results of aminotransferase levels which were lower than the preoperative period levels. Therefore, the ischemic tolerance of the liver was acceptable (Cherqui et al., 2000). The other reasons for PBD include improvement of postoperative liver function and regeneration capacity (Tracy et al., 1991; Kawarada et al., 1995). So, PBD should reduce the risk for postoperative liver failure and death. However, the rate of liver failure in our study was low (1.9%). Clinical and experimental data suggest that postoperative increase of alkaline phosphatase and γ-glutamyltransferase levels reflect liver regeneration (Suc et al., 1992; Sulakhe et al., 1986). In our study, activity of alkaline phosphatase showed initial sharp decrease due to biliary decompression but secondarily a reincrease. This may indicate liver regeneration. Two patients died of intra-abdominal collection, sepsis and renal and respiratory failure. This 6.7% mortality rate was also comparable to that reported after liver resection following PBD.

Table 1. Pre and Postoperative Laboratory Results

Laboratory	Preoperation	Day 3	Day 7
Cholesterol	209.0	180.0	114.0
Albumin	3.3	2.7	2.7
ALP	490.0	184.0	201.0
TB	19.4	15.4	13.7
AST	87.7	162.3	71.7
ALT	107.9	160.0	73.9

Table 2. Types of Operative Procedures*

Operative Procedure	Number	%
Extended Right Hepatectomy	11	36.7
Right Hepatectomy	15	50.0
Left Hepatectomy	4	13.3
Total	30	100

* Bile duct resection and enterobiliary anastomosis were performed in all cases

Table 3. Postoperative Complications**

Complication	Number	%
Pulmonary complications		
Pleural effusion	11	20.8
Pneumonia	7	13.2
Intra-abdominal collection	9	17.0
Sepsis	7	13.2
Biliary fistula	6	11.3
Prolonged ascites leakage	5	9.4
Wound infection	4	7.5
Intra-abdominal bleeding	2	3.8
Renal failure	1	1.9
Liver failure	1	1.9
Total patients with any complications	23	76.7

**Some patients had more than 1 complication. Twenty-three patients (76.67%) experienced postoperative complications, mainly resulting from pulmonary complications and subphrenic collection(34% and 17%). Liver and renal failure were surprisingly low (1.9% both).There were 2 patients had a perioperative mortality, died after right hepatic resection and biliary enteric reconstruction. Causes of death were intra-abdominal collection sepsis and died at day 30 and renal failure, respiratory failure and died at day 5. The range of hospital stay was 9-66 days (mean ± SD in days 30.5 ± 15.2). The range of postoperative stay was 5-65 days (mean ± SD in days

In our study, the overall morbidity rate of 76.7% was high. Pulmonary complications and intra-abdominal collections were the leading complications (34% and 17%). Thoracocenthesis and chest drain were used for treatment of plural effusion. Most of the intra-abdominal collection patients were treated by percutaneous ultrasound or CT- guided drainage.

All of the patients in this report were follow-up until the end of their lives. Median survival is 350 days. Although no patients survived for 5-years, there were two patients alive for more than 4 years. The survival was 33% at 1 year, 12% at 2 years, 10% at 3 years and 6.7% at 4 years. The advanced disease at presentation is clearly a problem. Appropriate patients selection and adjuvant chemotherapy may improve survival.

A comparison of our results with findings of earlier studies performed with and without PBD is given in Table 4. There were no obvious differences or advantages with the to approaches. Our operative mortality was relatively low but morbidity was high.

In conclusion, major liver resection without PBD is safe in most patients with obstructive jaundice hilar cholangiocarcinoma. Recovery of hepatic synthetic

Table 4. Results of Liver Resection for Obstructive Jaundice from Different Surgeons

Source	Period of Inclusion	No. of Patients	Operative Mortality (%)	Operative Morbidity (%)
With PBD				
Makuuchi et al., 1990	7	14	7	35.7
Nimura et al., 1991	14	29	17	66
Ogura et al., 1993	15	33	3.6	33
Nakeeb et al., 1996	22	109	3.6	54
Madariaga et al., 1998	13	28	14	32
Without PBD				
Bismuth et al., 1992	30	23	0	22
Parc et al., 1997	12	18	0	22
Cherqui et al., 2000	8	20	5	50
Present study	4	30	6.7	76.7

function is acceptable. Postoperative complications, especially plueral effusion and intra-abdominal collections are high.Renal and liver failure are low. Median survival is 350 days. Whether PBD could improved these results remains to be determined by randomized control trial in the future.

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