Oral Presentation II

II-1

Effect of Preoperative Portal Vein Embolization in Patients with Klatskin Tumor

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Research Purpose: Portal vein embolization (PVE) is often used to increase future liver remnant (FLR) in patients who are expected to undergo major hepatectomy with small FLR. Although Klatskin tumor usually needs more extensive hepatectomy and majority of patients have abnormal liver function, indicated liver volume criteria for PVE and its clinical usefulness are not well established. The objective of this study is to explore the change of liver volume and function before and after major hepatectomy, and to evaluate the effect of PVE in patients with Klatskin tumor

Materials and Methods: Data were collected from patients who underwent major hepatectomy with a diagnosis of Klatskin tumor at Seoul National University Hospital from 2005 to 2010. Radiologic image and clinicopathologic characteristics including liver function tests were analyzed.

Results: Among 163 biliary tract cancers involving hepatic hilum, 82 patients underwent hepatectomy and 49 of them were right sided hepatectomy. Of these, 33 patients with preoperative FLR less than 30% were included for further analysis. The study subjects were at mean age of 64.9 years, and male to female ratio was 2 to 1. The study population included 11 PVE (33.3%), and 8 right trisectionectomy (24.2%). PVE was more often performed in patients with planned right trisectionectomy (54.5% vs. 13.2%, p=.009), but total liver volume (1393.8 vs. 1425.4 ml, p=.750) or FLR (20.8 vs. 22.4%, p=.260) revealed no significant difference in PVE or non-PVE group. PVE group showed mean of 19.3% increase in FLR (288.1 vs. 347.8 ml, p=.068) after mean of 15.8 days after PVE. Preoperative FLR was higher in PVE group than non-PVE group (FLR 27.2 vs. 22.4%, p=.023). There was no difference in postoperative liver hypertrophy ratio (PVE:non-PVE=234.4 vs. 203.9%, p=.179), and volume (PVE:non-PVE=662.6 vs. 627.8 ml, p=.588) after 1 week of operation. Liver function blood tests remained unchanged after PVE, increased at postoperative day 1, and recovered to preoperative level at postoperative day 7. This pattern was not statistically different between PVE and non-PVE group. There was no severe PVE related morbidity except 4 patients (36.4%) with moderate degree of fever after PVE. Postoperative morbidity (63.6 vs. 31.8%, p=.136) and mortality (18.2 vs. 0%, p=.104) rates were comparable in PVE and non-PVE group. Initial FLR was less than 20% in 10 patients (30.3%). Postoperative liver hypertrophy ratio was correlated with initial FLR (R2=.255, p=.003). PVE did not have significant impact on liver hypertrophy in patients with initial FLR of less than 20% (258.1 vs. 218.6%, p=.326) or higher than 20% (220.9 vs. 198.5%, p=.291).

Conclusions: Preoperative PVE increased FLR of 19.3% in patients with Klatskin tumor. However, postoperative liver hypertrophy ratio, final liver volume, or liver function tests were not affected by PVE, even in patients with initial FLR of less than 20%. Preoperative PVE in Klatskin tumor has minimal clinical effect.

II-2

Clinicopathologic Analysis of Extrahepatic Bile Duct Cancer with a Microscopic Positive Ductal Margin

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Background and Aims: Although reported 5-year survival rates of extrahepatic bile duct cancer lie between 20-30%, the survival rate of that with microscopic positive resection margin is unclear. The objectives of this study were to analyze the clinicopathologic features of extrahepatic bile duct cancer with a microscopic positive ductal margin after surgical resection and identify prognostic factors associated with survival.

Methods: 508 patients from a total of 561 patients with extrahepatic bile duct cancer underwent surgical resection between 1995 and 2007. Among them, 128 patients (25.2%) had microscopic positive ductal margin which included invasive carcinoma (n=83, 68.0%), carcinoma in situ (n=18, 14.6%), high grade dysplasia (n=21, 17.2%) after pathologic review. We analyzed clinicopathologic feature, outcome and prognostic factors with microscopic positive ductal margin. Also, we analyzed the accuracy of intraoperative pathologic diagnosis on margin status including low grade dysplasia (n=23).

Results: Extrahepatic bile duct cancer was classified as perihilar bile duct cancer (n=231) and distal bile duct cancer (n=277) according to the anatomic location. The type of operation included hepatobiliary resection (HBR; extended either right or left hepatectomy, caudate lobectomy, and hilar bile duct resection, n=127, 25.0%), bile duct resection (BDR; n=115, 22.6%), pancreatoduodenectomy (PD; n=225, 50.2%), and hepatopancreatoduodenectomy (HPD; n=11, 2.2%) in patients with surgical resection. 90 patients with perihilar bile duct cancer and 32 patients with distal bile duct cancer had microscopic positive margin with curative intended operation. (42.8%, 12.3%, p=0.001). The locations of positive margin were proximal (n=75, 61.5%), distal (n=5, 4.1%), both (n=29, 23.8%), radial (n=5, 4.1%) after pathologic review ($p<0.001$). The accuracy of intraoperative frozen pathologic diagnosis for the margin status was 45.6%. Median survival, 3 year and 5 year survival rate in patients with microscopic positive margin and with negative margin were 21.0 and 38 month, 34.8 and 50.9%, 12.9 and 41.7% respectively ($p<0.001$). Invasive carcinoma on the resection margin was identified as single prognostic factor by statistical analysis (median survival 18 vs. 29 months, p=0.037). There were no significant differences in survival analysis of tumor invasion, tumor location, histologic differentiation, type of operation, the presence of adjuvant treatment such as chemotherapy or radiotherapy.

Conclusions: The presence of microscopic positive resection margin is known as an important prognostic factor in the extrahepatic bile duct cancer, but the accuracy of intraoperative frozen pathologic diagnosis at surgery was not high. Because it is not uncommon of long-term survival in spite of microscopic positive ductal margin, resection should be considered and efforts should be made to obtain an 'invasive carcinoma'-free margin.

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Preoperative Inflammation Has a Negative Impact on Survival after Resection of Extrahepatic Bile Duct Cancer

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Purpose: Although inflammation is occasionally associated with carcinoma, the influence of inflammation on the prognosis of patients with carcinoma is still unknown. The significance of the presence of preoperative inflammation on the prognosis of patients with extrahepatic bile duct cancer (BDCA) was evaluated.

Methods: The clinical data of 84 patients who underwent surgery for BDCA from August 2003 and May 2009 were reviewed and survival analysis was performed. The patients were classified into two groups according to the presence of preoperative cholangitis: Group C− showed the absence of cholangitis (n=59) and Group C+ showed the presence of cholangitis (n=25).

Results: There was no difference in gender, the mean age, the TNM stage, biliary drainage, the type of resection and radicality between the two groups ($P>0.05$). The 3-year disease-specific and disease-free survival rates of the Group C+ patients (21.5% and 11.9%) were significantly lower than those of the Group C− patients (66.1% and 57.3%; P=0.013 and 0.001, respectively). The multivariate analysis showed that preoperative inflammation and lymph node metastasis were the independent prognostic factors for both overall survival (P=0.021; RR=2.224 and P=0.015; RR=2.367, respectively) and disease-free survival (P=0.014; RR=2.192 and P=0.013; RR=2.240, respectively). In Group C+, the rates of angiolymphatic and perineural invasion were higher than those in Group C- (P=0.016 and 0.030, respectively).

Conclusions: The presence of preoperative inflammation is an independent poor prognostic factor for overall and disease-free survival for the patients with BDCA.