간담췌 O-Ⅱ-1

Influence of resection margin on clinical outcomes in resectable hepatocellular carcinoma

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(Purpose) The effect of Surgical resection margin in hepatocellular carcinoma (HCC) remain controversial. The objective of this study is to examine the effect of surgical margin status on postoperative recurrence and long term outcomes in resectable hepatocellular carcinoma. **(Methods)** A retrospective study was conducted on 1098 patients who underwent hepatectomy at division of hepatobiliary and pancreatic Surgery, Asan Medical Center, Seoul, Korea, for hepatocellular carcinoma between December 1999 and December 2009. They were divided into 5 group with surgical margin histological positive (group A, n=50), surgical margin negative by less than 1mm (group B, n=182), 1-5mm (group C, n=228), 6-10mm (group D, n=194), wider than 10mm (group E, n=326). **(Results)** After excluding group A, there was no significance difference in disease free survival (DFS)e and overall survival (OS) among the 4 groups on log rank test. The 5 group patient's 1-,3-, and 5-year recurrence free survival was A: 28%-16%-16%, B: 53%-37%-33%, C: 53%-37%-33%, D: 63%-45%-37%, E; 56%-42%-36%. The 5 group patient's 1-,3-, and 5-year overall survival rate was A: 44%-36%-24%, B: 82%-67%-56%, C: 83%-67%-61%, D: 87%-73%-64%, E; 88%-70%-61%. Margin positive group in comparison with group B-E has poor prognostic factors (tumor size, tumor multiplicity, vascular invasion, and UICC stage). So, in multivariate analysis, group A is not associated with DFS and OS. **(Conclusion)** The width of the resection margin did not influence the recurrence rate and overall survival. Also, type of intrahepatic recurrence did not differ between group A to E. Only a postitive histologic margin was associated with a high recurrence rate and low overall survival time. However, in multivariate analysis, there was no difference.

간담췌 O-Ⅱ-2

Volumetric analysis and ICG R15 as predictor of posthepatectomy liver function

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(Purpose) Posthepatectomy liver failure (PHLF) is closely related to the volume and function of the remnant liver. The future liver remnant (FLR) is usually calculated as a ratio of remnant liver volume (RLV) to total functional liver volume (RLV/TFLV). In liver transplantation, It is generally accepted that a ratio of graft volume to standard liver volume (SLV) need to be at least 30% to 40% to fit the hepatic metabolic demand of the recipient. Indocyanine green retention rate at 15 minutes (ICG R15) is the most common preoperative test for evaluating hepatic functional reserve. The purpose of this study was to compare actual FLR (RLV/TFLV) versus standardized FLR (RLV/SLV) and to evaluate the predictive value of safe FLR calculated using ICG R15. **(Methods)** Volumetric measurement of RLV using CT volumetry were obtained retrospectively in 74 patients who underwent right hemihepatectomy for malignant hepatic tumor from January 2010 to

May 2013. The records were reviewed retrospectively. RLV and TFLV were obtained using CT volumetry, and SLV was calculated using Yu's formula: SLV (ml)=21.585xbody weight (kg)0.732xHeight (cm)0.225. RLV/SLV ratio was compared with RLV/TFLV as a predictor of postoperative hepatic function. Safe FLR was calculated using Lee's formula: safe FLR=1.98xICG R15 + 0.3672, and adjusted with ROC curve. **(Results)** PHLF, morbidity, serum total bilirubin level at postoperative day 5 (POD 5) were increased significantly in group RLV/SLV ≤ 30% compared with group RLV/SLV >30% (p=0.002, p=0.004, and p<0.001, respectively). But RLV/TFLV was not correlated with PHLF and morbidity (p=1.000 and 0.798, respectively). RLV/SLV showed more strong correlation with serum total bilirubin level at postoperative day 5 than RLV/TFLV (RLV/SLV vs. RLV/TFLV, R=0.706 vs. 0.499, R2=0.499 vs. 0.239). Safe FLR calculated using ICG R15 showed a 66.7% of sensitivity and 92.3% of specificity. **(Conclusion)** RLV/SLV was more specific than RLV/TFLV in predicting postoperative course after right hemihepatectomy. It seems that RLV/SLV ratio greater than safe FLR calculated using ICG R15 is an appropriate threshold for performing safe right hemihepatectomy.

간담췌 O-Ⅱ-3

Preoperative prognostic factors can predictive tumor recurrence and survival in patients with hepatocellular carcinoma

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(Purpose) Surgical resection has been known as the gold standard of treatment for hepatocellular carcinoma (HCC). However, the tumor recurrence after surgical resection has been major obstacle for long term survival. So, the appropriate patient selection would be very important, especially to the patients with the advanced tumor. Authors evaluated preoperative prognostic factors for tumor recurrence and survival rate to refine the patient selection. **(Methods)** From January 2000 to June 2012, we analyzed retrospectively 298 patients who had undergone surgical resections for HCC with curative intention at our hospital. All patients were confirmed by HCC with safe resection margin by pathology. Six patients were excluded because of the post-operative mortality. We analyzed the influencing factors to the recurrence, survival and the prediction factors for the tumor biology. **(Results)** Of the 298 patients, 129 patients (43.3%) developed tumor recurrence during the follow-up period. The median follow-up duration was 32 months (3-163 months). The 5 year disease free survival rate was 47.0%. The 5-year survival rates were 83.0% in the non-recurrence group and 27.6% in the recurrence group, respectively. The overall survival was 58.7%. In multivariate analysis, an alpha-fetoprotein (AFP) level of >100 ng/ml and a standardized uptake value (SUV) of positron emission tomography-computed tomography (PET-CT) of >3.5 were analyzed as the predictive factors for tumor biology, recurrence, and survival rate. Tumor size of >5 cm and a relative enhancement ratio (RER) calculated from the magnetic resonance imaging (MRI) were also analyzed that those were significantly associated with the tumor biology, recurrence, and survival rate in univariate analysis. Based on these data, we established a scoring system to predict recurrence and survival rate after surgery using AFP, SUV, and RER. In those with a tumors of >5 cm, the score was significantly predictive both recurrence (p=0.009) and survival (p=0.001). **(Conclusion)** The serum AFP of >100 ng/ml, tumor size of >5 cm, SUVs on PET-CT of >3.5 and RER are useful factors to predict tumor biology, recurrence, and survival rate preoperatively. The tumor size, serum PIVKA II level, and RER were also

predictive of the prognosis after surgery. Base on these data, it is possible to predict a good prognosis after surgical resection using our scoring system even in high-risk patients with a large size tumor.

간담췌 O-Ⅱ-4

Survival outcomes after hepatic resection for hepatocellular carcinoma and comparison of therapeutic modalities for recurred hepatocellular carcinoma: A single center experience for 10 years

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(Purpose) Surgical resection is undoubtedly the standard modality for resectable hepatocellular carcinoma (HCC). The aim of this study was to evaluate survival outcomes after hepatic resection for HCC and to compare outcomes of various modality for recurred HCC. **(Methods)** Between April 2004 and August 2013, data of 500 patients who underwent hepatic resection for HCC at Chonnam National University Hwasun Hospital were reviewed. For calculation of cumulative survival, the Kaplan-Meier method was used. Comparisons were made with the univariate log-rank test. **(Results)** Male was predominant (Male : Female=85.6% : 14.4%) and Median age was 59.0 (range: 29-53). The mean follow up of all patients was 39.4 (range, 1~111 months) months. The postoperative mortality rate was 2% (n=10). Overal 1-, 3-, and 5-year survival rates were 94.1%, 84.1%, and 77.8%, respectively (mean survival time, 90.2 months). Disease-free 1-, 3-, and 5-year survival rates were 69.1%, 46.6%, and 36.8%, respectively (mean survival time, 49.0 months). Recurrence was observed in 254 patients (50.8%) during observation period. 30 patients underwent repetitive resection for recurred HCC. Radiofrequency ablation (RFA), transarterial chemoembolization (TACE), and chemotherapy or radiotherapy were performed in 78, 111, and 22 patients, respectively. Overall 1-, 3-, and 5-year survival rates were 98.1%, 87.8%, and 83.6% (mean survival time, 96.4 months), in radical intended treatment (repetitive resection and RFA) group, 87.4%, 66.5%, and 53.8% (mean survival time, 66.0 months) in TACE and other treatment group, and, 69.2%, 18.5%, and 0% in no-treatment group, respectively. **(Conclusion)** Hepatic resection was a safe and effective therapeutic modality for HCC. Recurrence rate was high, however, survival rate could be improved with active and proper treatment for recurred HCC.

간담췌 O-Ⅱ-5

Prognosis of the patients with Hepatocellular carcionoma with bile duct invasion

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(Purpose) Hepatocellular carcinoma (HCC) with bile duct invasion is much rarer than vascular invasion, and therefore, is not well characterized and studied until these days. There is no globally standardized staging system for HCC, but it is known that bile duct invasion on pathologic finding itself is not the independent factor for estimat-

ing prognosis of HCC after operation. The purpose of this study is to present the characteristics of HCC with bile duct invasion and to compare the prognosis of that with other prognostic factors. **(Methods)** Between January 2009 and December 2010, 169 patients underwent hepatic resection at Seoul National University Hospital (SNUH) for HCC. We reviewed all patients' pathologic tumor grade data (TNM staging by AJCC), radiologic data to determine the presence of bile duct invasion. And other preoperative clinical information such as age and sex, epidemiologic data (underlying liver disease), biochemical data (AFP, PIVKA-II), tumor size and numbers, preoperative treatments were collected to compare the implications of factors for prognosis. We compared overall survival and recurrence free survival to evaluate the prognosis of bile duct invasion. **(Results)** Among 169 patients, 9 patients were improved to have bile duct invasion on pathologic and radiologic findings. 90 patients were recurred after operation on 2 year follow up, and 17 patients were expired. By comparing the characteristics of the groups with and without bile duct invasion The median age, preoperative tumor size and T-stage had no significant differences. The group with bile duct invasion showed more vascular invasion (7 in 9 (77.7%), than without bile duct invasion group (43,5%). For prognosis, the patients with bile duct invasion showed poor prognosis than without invasion. In multivariant comparison with other prognostic factors, bile duct invasion improved not to have affect for the prognosis of HCC independently, but by subgrouping T-stage, the bile duct invasion was proved to be the independent factor for the prognosis of HCC in early stage (T1 and 2). **(Conclusion)** Bile duct invasion accompanies vascular invasion in most cases. Bile duct invasion itself is not the independent prognosis factor for HCC. But in early HCC (T1 and T2) with bile duct invasion has poor prognosis.

간담췌 O-Ⅲ-1

Conversion to entecavir monotherapy from combination therapy with hepatitis B Immunoglobulin for hepatitis B prophylaxis in long term survivor after liver transplantation: Prospective single center trial

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(Purpose) As a novel hepatitis B prophylaxis after liver transplantation, Combination therapy of intravenous Hepatitis B immunoglobulin (ivHBIG) and nucleoside (NA) analogue, has been the best method for HB related liver disease. However, because of many controversy of ivHBIG for prophylaxis, we evaluated efficacy of entecavir (ETV) monotherapy after discontinuation of ivHBIG in long term survivor after LT. **(Methods)** Between February 2009 and December 2011, 20 candidates (12.9%) were prospectively enrolled among 154 consecutive LT recipients for HB related liver disease. All patient (1) had HB related liver cirrhosis, (2) Survived more than 2-years after LT, (3) Underwent post-LT HB prophylaxis over one-year combination therapy with ETV (0.5mg daily) and ivHBIG (10,000 IU per 5 weeks). Additional inclusion criteria was any one of the follows; (a) NA-naïve patient, (b) If, have NA-treated history, Negative YMDD Mutation (c) Negative HBe antigen (HBeAg) and HBV DNA (<100 IU/mL), Primary endpoint was the 2-year recurrence rate of Hepatitis B (reappearance of HBsAg or HBV DNA). **(Results)** All patients were followed up without HB recurrence during the second year. Only one recipient (5%) experienced HBV