

orectal metastases, even though initially unresectable HCRM. Because aggressive treatment such as repeated hepatectomy and chemotherapy might be achieved more favorable survival for bilobar HCRM. Although our results couldn't identify the factor which contributed to prognosis because of short-term follow-up, aggressive HCRM resection was thought to be safe and helpful in patients with synchronous or metachronous metastases and associated with lower morbidity and mortality rate, even if repeated laparotomy.

I-4

Resection of Pulmonary Metastases from Hepatocellular Carcinoma following Liver Transplantation

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Research Puropose: This study intended to assess the effect of resection of pulmonary metastasis (PM) of hepatocellular carcinoma (HCC) after liver transplantation (LT). No effective treatment modality exists for PM-HCC, and little is known about the outcomes of pulmonary metastasectomy (PMT).

Materials and Methods: Of 587 adult LT recipients diagnosed with HCC, 43 had PM-HCC. We retrospectively compared outcomes in 23 patients who underwent PMT and 20 who did not.

Results: PMT was precluded in 10 patients in the non-PMT group by multiple (usually ≥ 5) lung nodules, in 9 by lung nodules with concurrent or residual extrapulmonary metastasis, and in 1 by co-morbidity. Of the 23 patients in the PMT group, 14 underwent a single session of PMT, 7 underwent 2 sessions each and 2 underwent 3 sessions each, for a total of 34 sessions. There were no surgery-related deaths or complications. After first PMT, 41 nodules, each 0.2-2.5 cm in diameter, were observed, 1-5 nodules per

patient. Every available treatment was provided to patients with post-PMT recurrence and those in the non-PMT group to control pulmonary and extrapulmonary metastases. Patient survival rates before PM diagnosis did not differ between the two groups ($p=0.141$). However, 2-year post-PM survival rate was significantly greater in the PMT group (30.6% vs 0%, $p=0.007$), resulting in a significantly greater overall 5-year survival rate (44.7% vs 12.8%, $p=0.017$). Univariate analysis showed no risk factor significantly associated with patient survival after PMT.

Conclusions: Resectable PM-HCC can be detected early by frequent assays of serologic tumor markers combined with chest CT scans. It deserves to perform PMT for resectable PM-HCC because it may provide a chance of long-term survival in a considerable proportion of patients.

I-5

LDLT Combined with Interposition Graft of Retrohepatic IVC for the HCC Located in the Caudate Lobe and Right Liver to get Curative Goal Over Milan and Within UCSF Criteria

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Background: Liver transplantation for the decompensated hepatic cirrhosis with HCC beyond Milan criteria is a still debating issue. Living donor liver transplantation (LDLT) for a big HCC located in the caudate lobe is an additional challenge in afraid of dissemination of cancer cells while doing recipient hepatectomy in Piggy-back technique for LDLT. To decrease a chance of disseminating cancer cells during recipient hepatectomy, en bloc resection of the liver including retrohepatic IVC and artificial venous graft may be a solution of this problem. We report a case of LDLT using right liver of living donor combined with IVC interposition graft after en bloc resection of the liver and retrohepatic vena cava.

Case: A 50-years old male patient who had chronic hepatitis B cirrhosis developed HCC in the caudate lobe and segment 5. The diameters of the masses

were 4.5 cm & 2.5 cm respectively. There was neither metastatic lesion (intrahepatic or extrahepatic) nor vascular invasion. His INR was 1.68, bilirubin 3.6 mg/dl, albumin 2.7 gm/dl, ICG R15 59.7%, MELD score 17, a-FP and PIVKA II level was 15.8 ng/ml and 78.2 mAU/ml. He had moderate amount of ascites. He did not applied any kind of therapy including TACE or local ablative therapy of the HCC before transplantation. For the recipient hepatectomy, we did en bloc resection of the whole liver including retrohepatic vena cava with very limited manipulation or compression of the caudate lobe during resection and reconstructed IVC with rifampicin soaked Dacron graft (Hemashield®). We performed transplantation a right lobe that was taken from living donor, with anastomosis of the right hepatic vein to the grafted Dacron. In order to prevent kinking or awkward anatomical positioning, we made a cuff to the right hepatic vein stump with great saphenous vein on the back table. We did not use veno-venous bypass during entire procedure. Total anhepatic period was 84 minutes. The vital sign of the patient was stable and transfused 2880 ml of packed RBC during entire operative procedures.

Conclusions: the surgical technique is feasible in terms of safety of anatomical reconstruction and stability of the vital sign during entire procedure without veno-venous bypass. We should observe and evaluate long term safety for cancer recurrence and infection of artificial vascular graft in the milieu of immunosuppression after liver transplantation.

I-6

Outcome of Invasive Fungal Infection in Liver Transplantation: Five Cases at a Single Center

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Background: Invasive fungal infection (IFI) is associated with increased morbidity and mortality in liver transplantation (LT). Fungal infections have been reported about 42% incidence rates in LT and account for 20% to 30% of all major infections. We report 5 cases of IFIs that developed after LT. Of 670 liver transplant recipients who underwent LT between March 1988 and February 2009 in our center, 5 patients developed IFI. Their original diseases were Hepatitis B virus-related liver cirrhosis with hepatocellular carcinoma (HCC) (n=2), Hepatitis C virus-related liver cirrhosis with HCC, primary biliary cirrhosis, and fulminant hepatitis from unknown origin respectively. Only one patient underwent living-donor LT and the mean age was 50.6 years (range 34 to 66 years). The pathogens were *Candida* at duodenum (n=1), *Aspergillus* from sputum (n=1) and at liver (n=1), *Cryptococcus* from cerebrospinal fluid (n=1; LDLT case) and ascites (n=1). Three patients among them died of multi-organ failure and septic shock from IFIs on postoperative day 29, 138 (LDLT case), 143 respectively. Although the overall incidence of fungal infection in LT has declined now a days due to the early treatment for high-risk patients, the overall mortality rate remains high. Numerous studies have attempted to determine the independent risk factors related to IFIs and to reduce the morbidity and mortality with empirical antifungal prophylaxis. Fungal infections are often diagnosed lately because of the difficulty of diagnosis, therefore we should perform the pre-LT screening for high-risk patients and prophylactic antifungal agents should be used after LT.