transplant function. At current follow up of 18 and 12 months, respectively, the isoagglutinin titers are titrated at a stable low level (1:8). Both patients are currently managed with an immunosuppression monotherapy (sirolimus or tacrolimus) with a moderate target level of 5–8 μg/L.

Conclusions: ABO-I-LDLT is feasible through a combination of preoperative immunoadsorption and intensified immunosuppression and shows graft and patient survival comparable with that of compatible liver transplantation. A minimization of immunosuppression is possible for long-term management.

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EARLY STEROID WITHDRAWAL REGIMEN CAN REDUCE DEVELOPMENT OF NEW ONSET DIABETES MELLITUS FOLLOWING ADULT LIVING DONOR LIVER TRANSPLANTATION

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Background: The incidence rate of new onset diabetes mellitus (NODM) is 10–30%. Steroid early withdrawal or free regimen is attempted in patients received adult liver transplantation to decrease metabolic complication such as diabetes mellitus (DM), hypertension, and dyslipidemia. There were a few of reports that steroid early withdrawal regimen (ESWR) can reduce development of NODM.

Aim: The purpose of this study is to evaluate that steroid ESWR can reduce developments of NODM (America Diabetes Association/World health Organization criteria) and to analysis the risk factors of NODM after LDLT.

Methods: One hundred and sixty seven patients were received adult LDLT from February 2005 to August 2009 in National Cancer Center, Korea. 67 patients were excluded because of no more than 3 months, deceased donor liver transplantation, DM before LDLT and exchanging immunosuppressive agents within 6 months. ESWR is inducted with interleukin-2 receptor antibody and maintained with tacrolimus and mycophenolate mofetil. Hundred patients were divided into two groups; patients who were applied to ESWR group and patients applied convention immunosuppression regimen (CISR) group. We compared ESWR group with CISR group in developing NODM after LDLT.

Results: Overall incidence of NODM was 13%: 5.7% in ESWR group (n = 35) and 16.9% in CISR group (p = 0.112). Multivariate analysis identified pre-transplant hypertension [hazard ratio: 4.26 (95% CI, 1.10–16.56), p = 0.036] and age more than or equal to 55 year [hazard ratio: 5.03 (95% CI, 1.29–19.56), p = 0.020] before LDLT as the independent risk factors for developing NODM. In subgroup analysis in age more than or equal to 55 year, there was significant difference between

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A CASE-SERIES STUDY OF INDUCTION IN LIVER TRANSPLANTATION: OUTCOMES AND ECONOMIC ANALYSIS

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Background: We investigated outcomes and economic implications of using different induction agents in liver transplantation.

Methods: From January 2000 to December 2008, 711 liver transplants were performed at our institution. Patients were divided into antithymocyte globulin (ATG) group (n = 167) *vs.* basiliximab group (n = 544). Maintenance immunosuppression was tacrolimus. Endpoints were total charges and resource utilization measured by length of stay (LOS), complications and readmissions.

Results: Transplant LOS was similar in both groups (14.5 days in ATG *vs.* 15.9 days in basiliximab). Cost of the initial admission was higher in the ATG group (US$209K *vs.* USS180K; $P < .01$). Total cost was higher in the ATG group (US$260K *vs.* US$217K; $P < .05$). There was a trend for higher re-admission rate in the ATG group (72% *vs.* 64%; p = 0.06). Overall rate of complications was similar in both groups (62% ATG *vs.* 68% basiliximab). Graft survival was superior in the ATG group (93%, 90% and 89% at 1, 3, and 5 years in the ATG group vs 90%, 84% and 81% in the basiliximab group respectively, $P < .05$). Patient survival was superior in the ATG group (96%, 92% and 92% at 1, 3 and 5-years vs 90%, 85% and 82% respectively; $P < .05$).

Conclusions: Type of induction in liver transplantation impacts the finances and outcomes of transplant centers, but does not influence re-admission and complication rates.

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EVEROLIMUS USE AS IMMUNOSUPPRESSION IN LIVER TRANSPLANT RECIPIENTS WITH RENAL INSUFFICIENCY

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Introduction: Renal insufficiency is a frequent problem after liver transplantation (LT), especially with the high use of calcineurin inhibitors (CNI).

Goal: To evaluate the effect of an immunosuppression protocol, consisting of a decrease or elimination of CNIs in connection with adding the mTOR inhibitor Everolimus, on renal insufficiency after LT.
Methods: Retrospective study of two groups of patients. Group A with 7 patients in whom the CNI was replaced by Everolimus together with Mycophenolate mofetil (MMF), and Group B with 7 patients in whom the CNI dose was decreased, MMF was discontinued and Everolimus was added. All patients started with GFR (^{51}Cr-EDTA) < 60 mL/min/1.73^2 with follow-up of over a year since Everolimus was added.
Results: In the first year, 6 out of 7 patients in Group A had an improvement in their GFR (mean increase 11.75) with the GFR stable in the remaining patient. In Group B, there was an improvement in the GFR in 5 out of 7 patients (mean increase 16.4). The two remaining patients had a slight deterioration (Δ GFR -9 and -8). One patient in Group B had an acute rejection that responded to an increase in the immunosuppression regimen.

Effect of Everolimus on Cr and GFR in liver transplant recipients with renal insufficiency

	Cr before (mean)	GFR before (mean)	Cr 1 yr after (mean)	GFR 1 yr after (mean)
A	1.51	42.2	1.39	52
B	1.36	47.28	1.17	56.6

Conclusion: In cases of renal insufficiency after LT owing to CNI, the use of the mTOR inhibitor Everolimus in an effort to decrease or, preferably, eliminate CNIs can stabilize and even improve renal insufficiency, while at the same time maintaining adequate immunosuppression coverage.

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RECURRENCE AFTER LIVER TRANSPLANT FOR HEPATOCELLULAR CARCINOMA

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Introduction: The aim of this study is to determine recurrence rates following transplantation for advanced HCC, identify predictors of recurrence so that high and low risk groups can be defined, patterns of recurrence and outcomes following aggressive treatment.
Methods: About 348 consecutive patients transplanted for HCC between 1996 and 2008 were analyzed. Clinical and pathological predictors of recurrence were identified. Recurrences were aggressively treated with multimodal therapy. Outcomes and predictive factors following treatment of recurrence were identified.
Results: The median follow up time was 34.5 months. 143/348 (41.1%) patients were outside the Milan Criteria. Recurrence occurred in 49 (14.1%) patients (Milan 7.6% *vs.* outside 22.5%; p = 0.001), 73.5% were within 2 years. On univariate logistic regression analysis α-FP > 400 (p = 0.008), progression (p = 0.004), number (p = 0.001) size and tumor diameter ($P < 0.001$), macro and micro vascular invasion ($P < 0.001$), beyond milan ($P < 0.001$) and a rapid increase in α-FP ($P < 0.001$) were predictive of recurrence. On multivariate analysis Milan post transplant (OR = 0.294, p = 0.042) and > 50% increase in α-FP (OR = 59.545, $P < 0.001$) remained predictive. Those had a single site of recurrence. The commonest sites were loco regional (49%) and chest (49%). Median survival after recurrence was 8.7 months (0–81) and 1, 3 and 5 year survival was 47%, 14% and 14% respectively increasing to 38% if recurrence was amenable to surgery. On uni and multivariate Cox regression only time to recurrence (HR 0.978, p = 0.018) and surgical treatment (HR = 0.243, p = 0.006) were associated with improved survival. 5 year overall and disease free survival was 75% and 71% respectively with no significant difference for within or outside Milan tumours. **Conclusion:** Excellent survival and acceptable recurrence rates can be achieved for LT for advanced HCC, aggressive multimodal therapy which includes surgery can achieve long term survival following recurrence.

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SUCCESSFUL MEDICAL TREATMENT OF CEREBRAL ASPERGILLOSIS WITH VORICONAZOLE FOLLOWING LIVER TRANSPLANTATION

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Aims: Extension of invasive aspergillosis (IA) to the central nervous system (CNS) is associated with high mortality in part due to poor CNS penetration of antifungal. Voriconzole is a broad spectrum triazole proven to be a superior alternative to Amphotericin B in IA which readily penetrates the blood-brain barrier yielding fungicidal drug concentrations within the CNS. However hepatotoxicity and interactions with immunosuppressive drugs, has limited its wide usage in liver transplant (LT) recipients.
Methods: The medical records of three difficult LT recipients with radiologically/ culture confirmed diagnoses of cerebral Aspergillosis were reviewed for antifungal treatment and outcome. Results:
Patients one and two were transplanted for drug induced acute liver failure (Female 50 years; Male 33 years) and patient three for primary biliary cirrhosis (Female 51 years). Patient one and two developed IA during the 3rd post LT week, but was detected only on week 11 in patient three. On imaging all three patients had brain and two had lung lesions. *Aspergillus fumigatus* was isolated in two patients. In patient one and two, IA disseminated whilst on therapeutic doses of amphotericin (3 mg/kg). Following diagnosis Voriconazole was added on in all three, whilst amphotericin was continued until clinical resolution. Voriconazole was continued as single agent for 6–9 months in all three. Close monitoring of tacrolimus levels, liver and renal biochemistry was performed during initiation of therapy, stabilization and during subsequent out-patient follow-up. No significant side effects due to Voriconazole were observed. Patient three was in renal failure prior to onset and continues to have

