0-46

Risk Assessment by Combining ^{18}F-FDG-PET with Serologic Markers of Tumor Biology Selects Suitable Liver Transplant Patients with Advanced Hepatocellular Carcinoma

Kornberg A.[1], Witt U.[1], Kornberg J.[2], Friess H.[1], Thrum K.[3], Müller K.[4]

[1]Technical University, Surgery, Munich, Germany, [2]Ludwig-Maximilans-University, Anesthesiology, Munich, Germany, [3]Helios Klinikum Berlin, Pathology, Berlin, Germany, [4]Friedrich-Schiller-University, Jeny, Germany

Introduction: ^{18}F-FDG-uptake on positron emission tomography (PET) was shown to correlate with outcome of liver transplant patients with hepatocellular carcinoma (HCC). However, it remained unclear whether one specific biological aspect may accurately predict risk of HCC recurrence, particularly in patients with advanced HCC stages. The aim of this study was to analyze the prognostic importance of ^{18}F-FDG-PET when combined with other pretransplant available serologic markers of biological tumor activity.

Methods: A total of 119 liver transplant patients with HCC were included. Pretransplant ^{18}F-FDG PET identified patients with PET+ (increased FDG-uptake) and PET- (no increased FDG-uptake) tumors. The impact of PET status along with macromorphologic (tumor size and number, Milan criteria) and biological (TACE, alpha-fetoprotein [AFP], C-reactive protein [CRP]) tumor features on HCC recurrence risk was analyzed in uni- and multivariate analysis.

Results: Overall 5-year recurrence-free survival rates in PET- (n=75) and PET+ (n=44) patients were 93.3% and 42.6% (p< 0.001). In multivariate analysis, PET+ status (HR=8.4; p=0.001), AFP-level >400ng/dl (HR=5.9; p=0.011), CRP level >1mg/dl (HR=4.9; p=0.01) and beyond Milan status (HR=3.6; p=0.028) were found as independent predictors of HCC recurrence. We defined a low-risk (^{18}F-FDG-non-avid), an intermediate risk (^{18}F-FDG-avid + AFP ≤400ng/dl + CRP ≤1mg/dl) and a high-risk (^{18}F-FDG-avid + AFP >400ng/dl or CRP >1mg/dl) constellation. Five-year recurrence-free survival rates were 93.3%, 83.9% and 25.8% in the low-risk, intermediate risk and high-risk subsets (p< 0.001), respectively. There was no significant outcome difference between low-risk and intermediate-risk patients (p=0.223). The number of suitable transplant candidates increased, thereby, from originally 69 Milan Out patients to 88 patients with low / intermediate biological risk (+28%).

Conclusion: We were able to demonstrate that a merely biology based risk stratification based on ^{18}F-FDG-PET and serologic tumor markers accurately predicts outcome. Thereby, the pool of eligible liver transplant patients with advanced HCC stages may be expanded.

0-47

A Simple Prediction Model for Recurrence of Hepatocellular Carcinoma after Liver Transplantation in Patients without Microvascular Invasion

Piñero F.[1], Costa P.[2], de Ataide E.[3], Hoyos Duque S.[4], Marciano S.[5], Anders M.[6], Varón A.[7], Zerega A.[8], Poniachik J.[9], Soza A.[10], Padilla Machaca M.[11], Menéndez J.[12], Zapata R.[13], Vilatoba M.[14], Muñoz L.[15], Maraschio M.[16], Podesta L.G.[17], McCormack L.[6], Gadano A.[5], Boin I.F.[3], Parente García J.H.[2], Silva M.[17]

[1]Hospital Universitario Austral, Pilar, Argentina, [2]Hospital Federal University Ceará, Ceará, Brazil, [3]Hospital da Clinicas, University of Campinas, Campinas, Brazil, [4]Hospital Pablo Tobón Uribe, Gastroenterology Universidad de Antioquía, Medellín, Colombia, [5]Hospital Italiano de Buenos Aires, Buenos Aires, Argentina, [6]Hospital Alemán, Buenos Aires, Argentina, [7]Fundación Cardioinfantil, Bogotá, Colombia, [8]Sanatorio Allende, Córdoba, Argentina, [9]Hospital Clínico Universidad de Chile, Santiago, Chile, [10]Hospital Universidad Católica, Santiago, Chile, [11]Hospital Guillermo Almenara, Antioquía, Peru, [12]Hospital Militar-Clinicas, Montevideo, Uruguay, [13]Clinica Alemana de Santiago, Santiago, Chile, [14]Instituo de Ciencias Médicas, Mexico city, Mexico, [15]Hospital Universitario de Monterrey, Monterrey, Mexico, [16]Hospital Privado de Córdoba, Córdoba, Argentina, [17]Hospital Universitario Austral, Liver Transplant Unit, Pilar, Argentina

Background & aim: Presence of microvascular invasion (mvi) in the explanted liver defines a higher risk of recurrence of hepatocellular carcinoma (HCC) after liver transplantation (LT). We aimed to evaluate pre and post LT predictors of HCC recurrence specifically in patients without mvi in the explanted liver.

Methods: A multicenter Latin American cohort of consecutive adult patients with a first LT in 17 LT centers was conducted (2005-2011). Pre-LT αfetoprotein (AFP) cut-offs were considered including ≤100, 101-1000 and >1000 ng/ml. Multivariate Cox regression analysis, with hazard ratios (HR) and 95% confidence intervals (CI) for 5-year recurrence was done.

Results: Of 2,761 transplanted patients, 527 with HCC were included. Overall, 113 patients presented mvi (21.4%) and 414 did not (78.6%). Patients without mvi were more frequently within MC at listing (85% vs 67%; P< 0.0001), within Up-to 7 in the explanted liver (89.4% vs 64.6%; P< 0.0001) and had lower dedifferentiated tumors (17% vs 32.1%; P=0.001), compared with recipients presenting mvi. For each AFP cut-off a progressive increase of mvi and dedifferentiated tumors was observed. On multivariate analysis, adjusted HR for independent related variables with HCC recurrence among patients without mvi were AFP >1000 ng/ml HR 4.56 (CI 2.17;9.61) and beyond the Up-to 7 criteria HR 4.37 (CI 2.56;7.46). From this model, three subgroups of patients were identified. Cumulative survival decreased progressively if either one or other risk factor was present (46% survival) HR 1.91 (CI 1.29;2.84), or both variables were present (14% survival) HR 9.31

(CI 40.3;21.51), respectively. An increasing 5-year recurrence risk was observed considering these groups (12%, 38% and 83%).

Conclusion: Considering the risk of HCC recurrence after transplantation in those patients without mvi, pre-LT AFP and Up-to 7 criteria are a simple tool to apply in the daily practice for individual cases.

0-48

Ethnicity and Underlying Disease Are Key Predictors of 10,844 de Novo Malignancies Following Liver Transplantation

Bhat M.[1], Mara K.[2], Dierkhising R.[2], Watt K.[3]

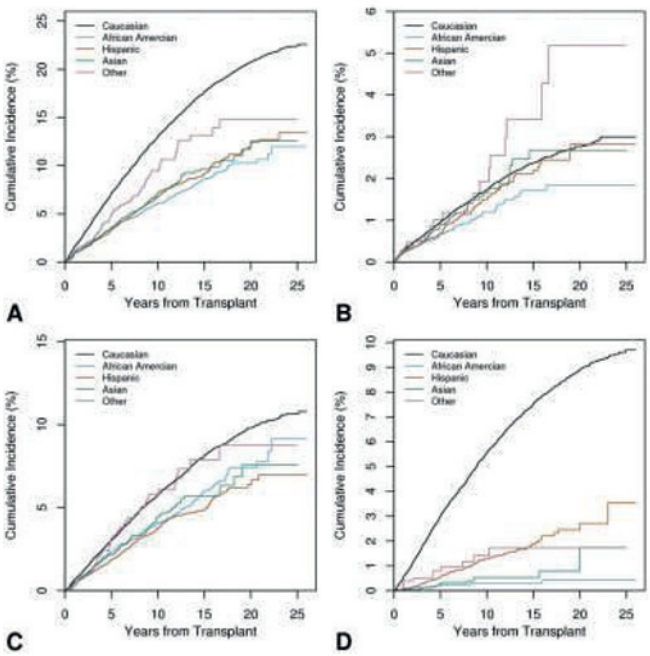
[1]University Health Network/Multi Organ Transplant Program, Toronto, Canada, [2]Mayo Clinic, Division of Biomedical Statistics and Informatics, Rochester, United States, [3]Mayo Clinic, Division of Gastroenterology and Hepatology, Rochester, United States

Background and aims: Malignancy after liver transplant (LT) is a leading cause of mortality, and screening for these malignancies should be individualized. The aim of this study was to determine a broader array of risk factors, including immunosuppression for de novo malignancies after LT using a large multicenter database.

Methods: The Scientific Registry of Transplant Recipients (SRTR) database comprising all 108,412 liver transplant recipients across the United States between 1987 and March 2015 was analyzed with a median of 6.95 years of follow-up.

Results: Mean age 51.9 ± 10.8 years, 64.6% male, 74.5% Caucasian, mean body mass index (BMI) 27.7±5.6 kg/m2, and 15.8% with previous malignancy. Malignancies during follow-up were 4,483 (41.3%) skin, 1,519 (14.0%) hematologic, and 4,842 (44.7%) solid organ. The 10 and 15-year probability of de novo malignancy was 11.5% (11.3-11.8%) and 15.8% (15.5-16.2%) respectively. No donor factors were independent predictors of malignancy. On multivariable analysis, in addition to known risk factors of age, male gender, multiorgan transplant and previous malignancy, both ethnicity and underlying liver disease were important predictors of malignancy. Caucasian race (compared to other races, p< 0.001) and Alcoholic liver disease, autoimmune, NASH, and PSC (compared to HCV, p< 0.001) were associated with higher risk of post-LT malignancy. mTOR-based immunosuppression was not a statistically significant predictor of malignancy compared to calcineurin inhibitor-based immunosuppression (p=0.056).

Conclusion: In addition to known risk predictors of age, male gender and multi-organ transplant, Caucasian race and underlying disease are important risk factors to help tailor individualized cancer screening protocols. Specific immunosuppressive agents were not



[Cumulative incidence of malignancies for different ethnicities with competing risk of death]

0-49

Single-center Experience of Long-term Survival Outcome between Primary Liver Transplantation and Hepatic Resection with Consequent Salvage Transplantation for Hepatocellular Carcinoma within Milan Criteria

Ng K.K.[1], Chok K.S.[1], Chan A.C.[1], Wong T.C.[1], Fung J.Y.[2], Lo C.M.[1]

[1]University of Hong Kong, Department of Surgery, Hong Kong, Hong Kong, China, [2]University of Hong Kong, Department of Medicine, Hong Kong, Hong Kong, China

Background: Whether primary liver transplantation (PLT) is superior to the upfront hepatic resection (HR) and salvage liver transplantation (SLT) for hepatocellular carcinoma (HCC) within Milan criteria is debatable.

Aim of study: To compare the long-term survival rates of patients with HCC within Milan criteria undergoing PLT with those undergoing HR + SLT.

Patients and methods: Patients with HCC within Milan criteria underwent PLT (n = 149) or HR + SLT (n = 26) were analyzed retrospectively from a prospective database. Patients' demographic characteristics, short-term and long-term outcome measures were compared between 2 groups.

Results: Patients' demographic characteristics and tumor status were comparable between 2 groups. PLT group has significantly higher MELD score than HR + SLT group. More patients in HR + SLT