Abstract No. : **OP-0340**

Topic : **Liver**

IMPACT OF LOW TACROLIMUS LEVEL OF GRAFT REJECTION, SURVIVAL, AND HEPATOCELLULAR CARCINOMA RECURRENCE

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Background : Tacrolimus is a key immunosuppressant in liver transplantation, with standard trough levels of 4-10 ng/mL. Concerns about nephrotoxicity, metabolic complications, and malignancies have led to interest in tacrolimus minimization.

Methods : We conducted a single-center, retrospective study of adult patients (≥19 years) who underwent living donor liver transplantation at our institution between January 2000 and December 2021. Patients were categorized into two groups based on tacrolimus trough levels (measured between one and two years post-transplant): a low FK group (<6 ng/mL) and a high FK group (≥6 ng/mL). We analyzed overall survival and biopsy-proven rejection-free survival in all recipients, and HCC recurrence-free survival among those transplanted for HCC. Cox proportional hazards regression was used to identify independent predictors of mortality, rejection, and HCC recurrence.

Results : The low FK group (n=941) demonstrated superior 10-year overall survival (82.8% vs. 68.8%, p=0.002) and rejection-free survival (86.7% vs. 72.8%, p<0.001) compared to the high FK group (n=176). Higher tacrolimus levels were independently associated with increased mortality (adjusted HR=1.98, p<0.001) and rejection (adjusted HR=2.20, p<0.001). Among 614 patients transplanted for hepatocellular carcinoma (HCC), there was no significant difference in recurrence-free survival (77.7% vs. 81.2%, p=0.483), and tacrolimus levels were not independently predictive of recurrence.

Conclusions : In this single-center, retrospective study, maintaining tacrolimus trough levels below 6 ng/mL did not appear to increase the risk of graft rejection or worsen overall survival. However, no significant reduction in HCC recurrence was observed in the low FK group. These findings suggest that careful tacrolimus dose minimization may be feasible in selected patients.

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