Abstract Type : Oral Presentation
Abstract Submission No. : F-006399

Albumin-Bilirubin Score as a Short- and Long-term Prognostic Factor in Liver Transplantation

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Introduction: The Albumin-Bilirubin (ALBI) score is a simple and objective indicator for liver function, but its role and clinical significance in liver transplantation (LTx) are unclear. The study aimed to investigate its utility as a predictor of short- and long-term outcomes in LTx recipients.

Methods: The study included 351 consecutive LTx recipients (217 adults, 134 pediatric) who underwent their first LTx between 1990 and 2022. Study 1: Patients were classified into low-ALBI (grade 1 or 2) and high-ALBI (grade 3) groups based on ALBI score at LTx. Background factors and short-term outcomes were compared. ALBI scores utility as a predictor for long-term prognosis was evaluated by ROC and multivariate analysis. Study 2: We examined the changes in ALBI score post-LTx and its usefulness as a follow-up marker.

Results: In Study 1, ALBI scores at LTx were: adults (-1.63±0.77), pediatric (-1.25±0.59). High-ALBI group had more severe liver failure (MELD 21 vs. 12, PELD 19 vs. 12) and massive blood loss. No significant increase in complications, but the high-ALBI group had 3 times higher in-hospital mortality (13% vs. 4%, p=0.020). In the adult cohort, the ALBI score was better than MELD/ChildPugh scores in graft failure prediction. Graft survival was significantly worse in the high-ALBI (Figure A, B) and was identified as an independent prognostic factor (HR 3.23, 95% CI 1.80-5.82, p<0.001).In Study 2, ALBI scores improved at 1-year post-LTx for adults (-2.67) and pediatric cases (-2.77), stabilizing over 20 years. ROC analysis revealed ALBI score at 1 year predicted graft failure (AUC: adults 0.83, pediatric 0.85, p<0.001), and ALBI grade 2 linked to poor graft survival (Figure C, D).

Conclusion: High ALBI at LTx predicted poor outcomes in adults. Subsequent ALBI increases post-LTx correlated with poor graft prognosis in both adult and pediatric cases, indicating the importance of investigation and intervention, including re-transplantation considerations.