

## IMMUNOLOGICAL RISK FACTORS IN ELDERLY, ADULT, AND PEDIATRIC LIVER TRANSPLANTATION: A PSM-MATCHED STUDY

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**Background** : With the growing global population aged over 65, the demand for elderly liver transplantation (LT) is increasing. This study aimed to identify immunological risk factors in elderly LT recipients by comparing them with adult and pediatric cohorts.

**Methods** : A single-center, retrospective study included 1467 LT recipients (Adult: 1171; Senile: 187; Pediatric: 109) from January 2010 to December 2021. Propensity score matching (PSM) was applied to 443 adults and 167 elderly recipients using nearest neighbor matching (caliper: 0.1; absolute SMD  $\leq$  0.1; 1:3 ratio). Covariates included MELD score, sex, underlying disease, blood type, preoperative conditions, laboratory parameters, and donor characteristics. Surgical outcomes within 5 years and inpatient variability (IPV) of tacrolimus were assessed across cohorts.

**Results** : Infections were more frequent in the elderly group (36.60%) than in adults (22.50%) but not statistically significant ( $p=0.07$ ). Bleeding complications were identical (31.00%,  $p=1.00$ ), with no significant differences in biliary stricture (26.80% in adults vs. 31.00% in elderly,  $p=0.58$ ) or biliary leaks (4.20% in adults vs. 8.50% in elderly,  $p=0.30$ ). The elderly group showed higher IPV of tacrolimus ( $34.95 \pm 17.82$ ) compared to adults ( $31.52 \pm 14.76$ ,  $p=0.02$ ), while the pediatric cohort exhibited the highest IPV ( $41.36 \pm 17.78$ ).

**Conclusions** : Elderly LT recipients exhibit distinct immunological risks, including increased IPV of tacrolimus and higher infection rates. While some complications are more frequent in the elderly, they are not statistically significant. Tailored immunosuppressive management is necessary to improve outcomes in this population. Further studies are needed to refine protocols for elderly recipients.

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