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Validation Of Laboratory Frailty-Index As A Predictive Factor For Living-donor Liver Transplant

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Background : Frailty is defined as the accumulation of deficits that increase vulnerability. The laboratory frailty index (FI-lab) was found to be useful in the general population and valid among several frailty measurement scales. We aim to apply this index as a predictor for living-donor liver transplantation (LDLT).

Methods : Between 2006 and 2021, LDLT recipients from Severance Hospital were included. The FI-lab was made by taking 32 factors from standard blood test results and vital signs taken before surgery. Each result is granted a score of 1 if it falls outside the normal range. The FI-lab score is calculated by adding all the scores and dividing them by the number of variables. Those with less than 21 laboratory frailty index variables were excluded. Patients were separated into two groups according to FI-lab 0.5. Given that the majority of LDLT patients have low model for end-stage liver disease (MELD) scores, we performed sensitivity analysis on patients with a MELD score<25.

Results : Among the total of 854 patients, those with FI-lab<0.5 were 531. Compared to the high-risk group (FI-lab≥0.5), the Low-risk group was more likely to be male, to have hepatocellular carcinoma, and to have a low MELD score. The low-risk group had a considerably greater overall survival rate than the high-risk group (P<0.001). The 1-year, 3-year, and 5-year overall survival rates were 89%, 85%, and 75% for the low-risk group, while they were 78%, 76%, and 58% for the high-risk group. Furthermore, cox-regression revealed that FI-lab<0.5 was independently associated with decreased risk of all-cause mortality ([aHR], 0.640, 95%[CI], 0.454-0.902, P=0.011). We were unable to demonstrate a difference in death-censored graft survival, rejection rate, or hospital stay. Among patients with a MELD score<25, the low-risk group also showed a better overall survival rate than the high-risk group with an independent association with decreased risk of all-cause mortality.

Conclusions : Patients with FI-lab<0.5 showed a higher overall survival rate than those with FI-lab≥0.5 in LDLT.

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