

Association between pre- and post-transplant nutritional indices and skeletal muscle mass with 5-year survival after liver transplantation: a retrospective study

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Background:

- Liver transplantation remains a definitive treatment for end-stage liver disease.
- Post-transplant outcomes are multifactorial; nutritional status plays a critical role.
- Prognostic Nutritional Index (PNI) and Skeletal Muscle Index (SMI) have been linked to survival outcomes.
- The association between changes in PNI and SMI and post-transplant survival remains underexplored.

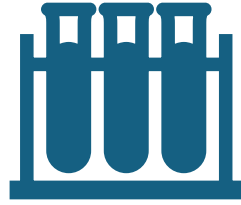
Objective:

- To investigate the impact of PNI and SMI changes on post-transplant survival in liver transplant recipients.



Study Design:

A retrospective cohort study involving 114 liver transplant recipients.



Measurements:

PNI and SMI were measured preoperatively and postoperatively.

PNI Calculation: Based on serum albumin and total lymphocyte count.

SMI Calculation: Derived from cross-sectional imaging to assess skeletal muscle mass.



Statistical Analysis:

Kaplan-Meier Survival Analysis: To evaluate the impact of SMI changes on survival stratified by PNI.

Log-rank Test: For comparison of survival curves between groups.

Cox Proportional Hazards Model: To identify independent predictors of post-transplant survival, adjusting for confounders.

Results

Kaplan-Meier Survival Analysis:

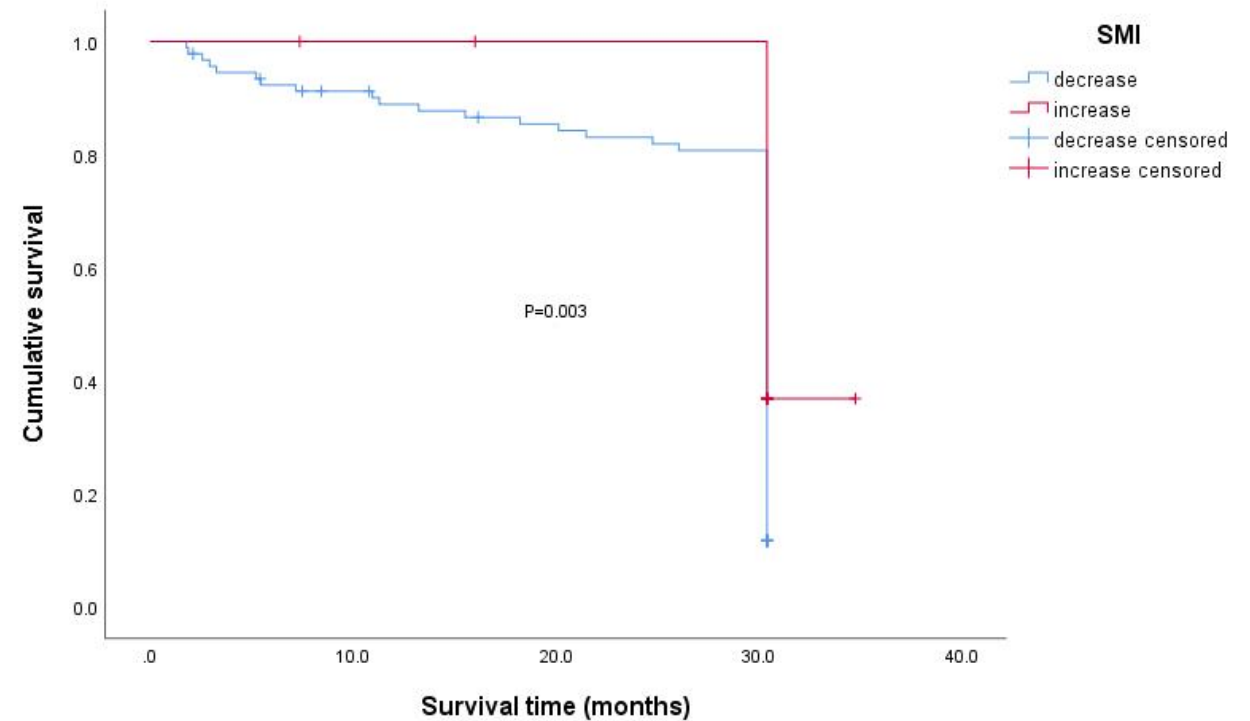
- Significant association between SMI changes and post-transplant survival ($p=0.003$).
- Stratification by PNI changes further emphasized the survival benefit in patients with increased PNI and SMI.

Log-rank Test:

- Demonstrated statistically significant differences in survival curves across SMI change groups ($\chi^2=8.960$, $df=1$, $p=0.003$).

Cox Regression Analysis:

- **SMI changes** were identified as an independent predictor of post-transplant survival after adjusting for potential confounders (HR = 1.5, 95% CI [1.2, 1.9], $p = 0.003$)



Conclusion and Implications

Conclusion:

- Changes in PNI and SMI are critical prognostic indicators for post-transplant survival.
- Integration of PNI and SMI assessments into pre- and postoperative care could optimize outcomes for liver transplant recipients.

Clinical Implications:

- Routine monitoring of nutritional and muscle status is recommended to guide personalized interventions.
- Early identification of at-risk patients allows for timely therapeutic strategies to improve survival.

Future Directions:

- Prospective, multi-center studies are warranted to validate findings and explore underlying pathophysiological mechanisms.

Keywords: Liver Transplantation, Prognostic Nutritional Index, Skeletal Muscle Index, Survival, Postoperative Outcomes

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