Association between pretransplant serum soluble programmed death protein 1 level and prognosis following liver transplantation in patients with hepatocellular carcinoma

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Background: The study aimed to assess the prognostic influence of pretransplant serum soluble programmed death protein 1 (sPD-1) in patients undergoing liver transplantation (LT) for treatment of hepatocellular carcinoma (HCC).

Methods: Data from 229 patients with HCC who underwent living donor LT between January 2010 and December 2015 were retrospectively evaluated. Stored serum samples were used to evaluate sPD-1 concentrations.

Results: Tumor recurrence, overall survival, and HCC-specific survival rates were 25.5%, 94.3%, and 96.0% at 1 year; 40.8%, 78.2%, and 80.7% at 3 years; and 44.5%, 75.4%, and 77.9% at 5 years, respectively. Prognostic analysis using pretransplant serum sPD-1 with a cutoff of 93.6 µg/mL (median value of the study cohort) did not have significant prognostic influence on HCC recurrence, HCC-specific patient survival and post-recurrence patient survival ($P \geq 0.26$). Prognostic analysis using sPD-1 with a cutoff of 300 µg/mL showed marginally higher tumor recurrence ($P=0.069$), similar HCC-specific patient survival ($P=0.25$) and higher post-recurrence patient survival ($P=0.045$). Multivariate analysis revealed that Milan criteria were prognostic for HCC recurrence and HCC-specific patient survival, but pretransplant sPD1 with a cutoff of 300 µg/mL did not become an independent prognostic factor.

Conclusions: The results of this study demonstrate that pretransplant serum sPD-1 may not have significant influences on post-transplant outcomes in patients with HCC, although there might be some potential prognostic influence from very high expression of serum sPD-1. Additional large-scale, multicenter studies and detailed mechanism studies are required to clarify the role of serum sPD-1 in LT recipients.

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