Impact of explant pathologic factors on hepatocellular carcinoma recurrence post-liver transplantation: Insights from a retrospective cohort study

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Introduction

- Hepatocellular carcinoma (HCC) is a leading cause of cancer-related deaths worldwide. With risk factors such as hepatitis B virus (HBV) and hepatitis C virus (HCV) infections, alcohol-related liver disease, and obesity, HCC has a poor prognosis with low survival rates. Diagnosis is typically made through imaging, and treatment options include resection and liver transplantation. However, HCC recurrence after surgery remains a significant concern. In this study, the aim is to identify demographic, clinical, and explant pathological factors associated with HCC recurrence in patients who underwent liver transplantation as a treatment for HCC.

Methods

- This retrospective cohort study was conducted at the liver transplantation department of Imam Khomeini Hospital Complex in Tehran, Iran. The study included 71 consecutive patients who underwent liver transplantation for HCC. Data were collected on patient demographics, clinical characteristics, explant pathological findings, and outcomes. The patients underwent liver transplantation using organs from brain-dead donors, and regular follow-up included liver magnetic resonance imaging (MRI) and laboratory tests. Univariate and multivariable models were used to calculate odds ratios (ORs) with confidence intervals (CIs) to assess the likelihood of HCC recurrence based on baseline variables.

Results

- The study included 71 patients with HCC who underwent liver transplantation. Among them, 7 patients (9.9%) experienced disease recurrence. The mean age of the patients was 53.5 ± 9.9 years, and 80.3% were male. The baseline characteristics of patients with and without recurrence were compared. During the study follow-up, 21 patients died, with a significantly higher number of deaths observed in the recurrence group. The mean Model for End-Stage Liver Disease (MELD) score was slightly higher in patients with recurrence, but the difference was not statistically significant. The etiologies of HCC included HCV, HBV, autoimmune hepatitis, cryptogenic, nonalcoholic steatohepatitis, and Budd-Chiari syndrome. Most patients had the not otherwise specified (NOS) subtype of HCC and intermediate differentiated histologic grade. Patients with recurrence had a higher rate of satellite nodules presence and lymphatic vessel invasion. Tumor number > 3, satellite nodules presence, and lymphatic vessel invasion were significantly associated with higher odds of recurrence, but no variables were found to be associated in the multivariable analysis.

Conclusion

- This study highlights the relationship between explant pathologic factors after liver transplantation for HCC with tumor recurrence and its importance in maximizing patient outcomes.