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Risk of post-transplantation recurrence in hepatocellular carcinoma patients within the Milan criteria: importance for evaluating the recurrence potential

Eunjin Lee¹, Jinsoo Ryu¹

¹Department of Surgery, Division of Transplant Surgery, Samsung Medical Center, Republic of Korea

Introduction: The optimal timing of transplantation for hepatocellular carcinoma is still under debate regarding the tumor biology and locoregional control with various treatments

Methods: We analyzed hepatocellular carcinoma patients within the Milan criteria in the initial treatment stage who subsequently underwent liver transplantation. Between 2007 to 2020 were included to the study. Patients who underwent locoregional therapy in our center were included. The number of locoregional treatment as well as the data regarding tumor recurrence and survival were analyzed. Recurrence potential index were calculated by logarithmizing the inversed mean recurrence-free duration of each patients.

Results: During the period, 423 patients within the Milan criteria during the initial treatment stage underwent liver transplantation. The median number of locoregional treatment before transplantation was 2 with an interquartile range of 0 to 4. There were 112 patients (26.5%) who underwent liver transplantation as the initial treatment. Multivariable Cox analyses showed that number of locoregional therapies (HR=1.114, CI=1.035-1.200, P=0.004), Child score at initial stage (HR=0.561, CI=0.362-0.868, P=0.010), PIVKA-II change ratio (HR=1.002, CI=1.001-1.004, P=0.005), tumor size (HR=1.276, CI=1.084-1.502, P=0.003) and tumor thrombosis (HR=17.454, CI=6.609-46.095, P<0.001) were significant factors related to recurrence-free survival. In a subgroup with patients with previous treatments, recurrence potential index (HR=1.632, CI=1.092-2.438, P=0.017) showed significant relationship with recurrence-free survival along with other factors.

Conclusion: This study showed that the risk of recurrence after transplantation does not significantly increase when the number of locoregional therapies and recurrence potential index. Optimal timing of liver transplantation should be cautiously decided in regards of recurrence potential of each patients.