Liver Transplantation for HCC in Korea

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There are many therapeutic modalities in hepatocellular carcinoma but the most reliable methods are surgical resection and liver transplantation. The disadvantages of surgical resection are high recurrence rate and decompensation of liver disease after resection. The advantage of liver transplantation include complete tumor resection, cure of underlying liver disease and the eradication of the cirrhotic tissue but the disadvantages are surgical risk, shortage of donor organ, long waiting time and high cost especially in cadaveric transplantation. The prolonged waiting time results in high rate of drop-out because of tumor progression.

Despite the theoretical advantage, the initial result of liver transplantation was disappointed but among them, some reports have shown a good result in careful selected patient and stressed the patient selection. Recently most center had adopted selected criteria such as Milan criteria.

This strict selection criteria has allowed progression of tumor in situation of shortage of organ donors and the long waiting period, in which induced a high drop out rate. So some reports suggested to solve this problems that the patient with tumor has to apply the extended selection criteria in tumor size and number (for example UCSF criteria) and give a priority on organ allocation (for example added MELD score).

The recent advance in adult living donor liver transplantation has solved donor shortage in partly, which depends on the waiting time and drop-out rate. In contrast to cadaveric graft which is a scarce public resource and subject to equitable allocation, the living graft is important to balance of the risk and benefit for the donor and recipient. Most centers has agreed extended indication in patient with tumor more advanced than the recommended criteria in living donor liver transplantation. The most appropriate criteria for patient section need to be further evaluation.

There is no meticulous study about liver transplantation with hepatocellular carcinoma in Korea and the paper is summerized the annual report of KONOS and the papers of several multi-center surveys.

Annual cases of liver transplantation in Korea were increased steadily year by year especially in living donor liver transplantation and on last year, 544 cases of liver transplantation were performed in Korea (480 cases in living transplantation, 64 cases in cadaveric transplantation). The mean time for waiting list in cadaveric transplantation was 111 days on 2000 and increased to 320 days in last year but in living transplantation, the waiting time was not so much interval change throughout years. The patient with hepatocellular carcinoma was occupied about 25% of all patients who performed liver transplantation in Korea. The liver cirrhosis by hepatitis B was the most common indication of live transplantation (90.5%), hepatitis C and alcoholic liver disease in remainings. The most cases were hepatocellular carcinoma (96.8%) and minority cases were cholangiocarcinoma,
hepatoblastoma. There were no gross difference of tumor characteristics between cadaveric and living transplantation.

Preoperative treatments during waiting time were consisted of chemoembolization, radiofrequency and surgical resection in small number. The adjuvant chemotherapy after liver transplantation was depended an hospital situation but adriamycin single or combination was main chemotherapeutic agent.

Comparison of recurrence curve did not show any statistical difference between cadaveric and living transplantation. Significant risk factors for tumor recurrence were alpha-fetoprotein level, tumor size, vascular invasion, tumor distribution, and histological differentiation on univariate analysis and tumor size, vascular invasion, histological differentiation on multivariate analysis.

The survival rate in patient with hepatocellular carcinoma was worse than that in patient without tumor but when applying Milan criteria or USCF criteria, there was no difference in survivals between two group. The patient survival rate in cadaveric transplantation was also worse than that in living transplantation due to high perioperative surgical mortality. Milan criteria were met in 70.4% in our series and their 3 year survival rate was 89.9& after cadaveric transplantation and 91.4% after living transplantation.

The tumor recurrence after liver transplantation which was correlated with tumor stage, even recur on early stage of tumor was founded about 20% of all patients during follow up period and most of recurrent patients were diagnosed within 12 months after transplantation. The liver graft itself was the organ most frequent affected, followed by the lung. In contrast to survival rate of primary transplantation, the survival rate after tumor recurrence in living transplantation was worse than in cadaveric transplantation. Multi-modality treatment including systemic chemotherapy, chemoembolization and surgical resection in patient with recurrent tumor were selected according to hospital situation but surgical resection could be performed in case of early diagnosis and only achieved long-term survival.

In summary, the operative incidence of patient with tumor in liver transplantation was occupied about 25 % of all case. The survival rate of patient with tumor after liver transplantation was worse than that of non-tumor but could achieved similar survival rate after applied the selection criteria. The survival rate in living transplantation is better than in cadaveric transplantation due to perioperative mortality. The most centers agreed more expanded criteria for patient selection in living transplantation but need the further study for appropriate selection criteria. Because all most of recurrent cases was found within 12 months after transplantation, the closed follow up for 12 months after transplantation is very important for early detection of tumor recurrence, which could induced surgical resection, followed by long-term survival.

References

Present Position:
Professor, Department of Surgery KangNam St. Mary's Hospital
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University Education
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