

The Role of Liver Transplantation in the Treatment of Hepatocellular Carcinoma

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It is known that hepatocellular carcinoma (HCC) is related to different risk factors, primarily represented by infection with hepatitis B or C virus, so in most cases the non-tumoral hepatic tissue is also affected by cirrhosis.

Amongst the therapeutic arsenal of HCC, the liver transplantation (LT) ranks first being the only treatment that offers a complete oncological resection and cure for the underlying liver cirrhosis simultaneously. Studies have shown that patients with LT have a significant better survival compared to those with liver resections [1]. Most patients with cirrhosis have abnormal liver function and are not candidates for resection.

Because there was much controversy regarding guidelines for LT in HCC, an international consensus conference was held in Zurich in 2010 aimed to develop internationally accepted statements and guidelines. The conference report had 37 statements and recommendations [2].

Although results after LT are increasingly better (overall 1-year and 5-year survival exceeds 85% and 70%, respectively in most centers) [2–4], there are many limiting factors especially represented by availability of liver grafts and the aggressiveness of tumor recurrence [5]. Good progress has been made in recent decade by early detection of HCC allowing an increasing application of LT between 1998 and 2008 [6]. Unfortunately, since 2009 LT rates are declining because the organ donor shortage is rising creating a growing imbalance between transplant-eligible patients and donors [3,6]. The shortage of donor livers leads to a growing waiting list and of the number of patients who are dropping out from candidacy because of tumoral progression [7].

While waiting for transplant patients undergo downstaging procedures but, based on existing evidence, no recommendation can be made for preferring a specific locoregional therapy for downstaging over others (chemoembolization, radiofrequency ablation, or ethanol injection) [2].

With 782,000 new cancer cases worldwide occurred in 2012, liver cancer is one of the leading cause of cancer-related death worldwide, and researchers from many countries are permanently struggling to find different strategies for the optimal management of HCC in order to obtain better survival rates [8]. In this sense, the Hungarian researchers have a good expertise with 469 LT performed until December 2011 [3]. A recent study from the Department of Transplantation and Surgery of the Semmelweis University,

Budapest revealed good survival rates (1-year: 85.7% and 3-year: 71.7%) after LT for HCC and the concern to find other possible ways to improve patient survival by refining recipient selection and tailoring individual immunosuppressive therapy, but also to expand the liver donor pool by developing the living donor liver transplant program. This last aspect is quite important considering the two main aspects of actuality: the decreasing numbers of deceased donors and the tendency to extent the Milan criteria. Amongst those 29 consecutive LT for HCC considered in the Hungarian study, 14 exceeded the Milan criteria.

The role of liver transplantation in the treatment of HCC will probably remain as important in the near future, in the absence of other more effective solutions, but statistically, organ demand far outweighs current supply. Considering the shortage of donors, extending Milan criteria may result in reducing the donor pool of organs for patients with nonmalignant liver disease [10]. Even if therapeutic liver cloning will be possible sometime [11] (which yet raises technical and ethical problems), transplantation, as a surgical technique, will still play an important role.

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