



Health-Related Quality of Life and Psychological Distress in Patients With Early-Stage Hepatocellular Carcinoma After Hepatic Resection or Transplantation

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ABSTRACT

Background. The aim of our study was to compare the post-operative health-related quality of life in patients with small hepatocellular carcinoma (HCC; within the Milan criteria) after liver resection or liver transplantation.

Methods. From August 2000 to December 2010, 207 patients were diagnosed with early HCC within the Milan criteria. We divided these patients into 2 groups according to their curative schedule: the liver transplantation group (n = 95) and the liver resection group (n = 110). We compared the baseline characteristics of these 2 groups of patients, after which we focused on comparing the post-operative health-related quality of life (HRQOL) and psychological outcome in these 2 groups.

Results. The demographics of the patients in the 2 groups were similar, and there were no significant differences except for higher family income in the transplantation group ($P = .002$). With long-term follow-up, there were no significant differences in the 8 domains of the HRQOL and the 9 domains of the psychological outcome measure between the 2 groups. Both the transplantation and resection groups exhibited good outcomes in both HRQOL and psychological outcome measures.

Conclusions. Several years after operation, early-stage HCC patients who underwent liver transplantation or resection had similar long-term HRQOL and psychological outcomes.

HEPATOCELLULAR carcinoma (HCC) is the second leading cause of cancer-related deaths worldwide, and its incidence is high and rising both in China and abroad. Globally, there are approximately 750,000 new cases of liver cancer reported per year [1,2]. HCC is more common in northeast Asia, especially in China, due to the high prevalence of hepatitis B infection [3]. Fortunately, the overall survival and tumor-free survival of patients have been improved as the result of surgical intervention, including resection or transplant, in patients with early-stage disease [4]. Liver resection, liver transplantation, and radiofrequency ablation are 3 potentially curative treatments for early-stage HCC [5]. The choice of therapy has been debated for a considerable amount of time, and some reports consider liver transplant to be the most effective

method for treating both the cancer and the underlying liver disease from which most HCC cases develop [2]. However, this benefit may be offset by problems related to transplantation, including graft rejection, immunosuppression complications, recurrent viral hepatitis, increased mortality, and a shortage of organ donors [6,7]. The most commonly used criteria worldwide are the Milan criteria [6], in which patients with up to 3 foci of HCC measuring less than 3 cm or 1 tumor measuring less than 5 cm are eligible for liver transplantation. However, almost all of these comparisons

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have focused on the post-operative complications, mortality, overall survival rate, and tumor recurrence rate [5,8–10]. In a previous study, we compared the outcomes of liver transplantation and liver resection in patients with early-stage HCC in terms of compensated liver function [3]. However, there are no published comparisons on health-related quality of life (QOL) and psychological distress after hepatic resection or transplantation. Self-perceived QOL is a multifaceted construct that includes both physical and psychological aspects of well-being. It directly affects daily activities and social functioning and thus represents an important measure of the success or failure of a medical intervention that extends beyond simple survival rates [11]. To gain a complete and deep understanding of the outcome of patients who underwent liver resection or transplantation, we evaluated and compared the QOL and psychological distress in these 2 groups of patients.

METHODS

Patients and Study Design

Between August 2000 and July 2010, 269 patients were diagnosed with early HCC within the Milan criteria at the West China Hospital of Sichuan University. They underwent liver resection or transplantation and were observed until October 2013. The inclusion criteria were as follows: age ≥ 18 years, diagnosis of early HCC, underwent resection or transplantation at least 3 years prior, ability to understand Chinese, had at least 6 months of follow-up, and did not have suicidal indications or a history of psychosis. In total, 5 patients were younger than 18 years old, and 31 patients died within 6 months after transplantation or resection (17 patients in the liver transplantation [LT] group and 14 patients in the liver resection [LR] group), 7 patients spoke their local language, and 15 patients were lost at follow-up. Therefore, these patients were excluded from our study. The remaining 207 patients were divided into 2 groups according to the surgery they underwent: the transplantation group (95 cases) and the resection group (110 cases). Parts of the clinical and demographic data were collected from the Chinese Liver Transplant Registry. The quality of life and psychological outcomes of the patients were collected from questionnaires.

Ethical Considerations

All of the living-donor liver transplantations were performed after approval by the Ethics Committee of Sichuan University and the local authority, the Health Department of Sichuan Province. In addition, the donation was voluntary and altruistic. All of the deceased donors were brain-dead donors in our hospital. This study protocol conformed to the ethical guidelines of the Declaration of Helsinki and was approved by the Ethics Committee of our hospital and local authority. All participants provided written informed consent.

Follow-Up and Instruments

Having treated nearly 1000 cases of liver transplantations and 9000 cases of liver resections at our institution, we have developed our own follow-up model. While the patients were in the hospital, we collected their detailed contact information, including the home address, at least 2 phone numbers, e-mail address, or other contact

methods. At discharge, we confirmed this information with the patient and their families and instructed the patients to pay attention to their daily life. We encouraged the patients to return for regular follow-up visits in the out-patient department according to the following schedule: every 1 to 2 months within the first 6 months, every 2 to 3 months in the next 6 months, and every 6 months thereafter. As soon as abnormalities were observed, the patients were recommended for further examination, intervention, or readmission.

We used the validated Chinese version (2002) of the Medical Outcomes Study Short Form-36 (SF-36) to assess the HRQOL in our patient population [12,13]. The SF-36 is a validated, self-administered questionnaire that is used internationally to measure 8 health domains over the prior 12 months, specifically, physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental components. The raw scores of each subscale are converted to scores that range from 0 to 100, with higher scores indicating higher levels of functioning or well-being. Scores representing overall physical functioning and mental functioning were calculated from the subscales and are presented as the physical component summary scales (PCS) and mental component summary scale (MCS) [11]. The level of HRQOL was assessed by comparing the mean value of the 2 groups.

The Chinese version of SCL-90-R is a 90-item, self-reported symptom inventory that was adapted by Wang [14] and is used to measure psychological symptom patterns among respondents in community, medical, and psychiatric settings. Each item is rated on a 5-point scale of distress, ranging from “not at all” (1 point) to “extremely” (5 points). The 9 primary symptom dimensions include somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The data from the 2 groups were compared and analyzed.

Statistical Analysis

The statistical analyses were performed with the use of SPSS 17.0 statistical software. Between-group differences in HRQOL and psychological health were tested by use of analysis of variance or nonparametric tests, as appropriate. Descriptive variables are expressed as mean \pm standard errors. Continuous data were compared by use of the Student 2-tailed test, and categorical data were computed by use of the Pearson χ^2 test or Fisher exact test, if necessary. The relationship between HRQOL and psychological symptoms were analyzed by use of Pearson correlation analysis. A 2-sided P value $< .05$ was considered to be statistically significant.

RESULTS

Baseline Characteristics

All of the patients signed informed consent for participation, and they all completed the validated questionnaires by interview or mail. The results of the questionnaires from interviews or mail were not significantly different. Table 1 shows the demographics of these patients and their tumor characteristics. The mean age of the patients in the transplantation group was older (48.1 vs 45.4 years) than that in the resection group, but this difference did not reach statistical significance ($P = .059$). There were many more male patients than the female patients in our study, with 92 male versus 18 female patients in the resection group and 83 male

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