Comparison of Liver Function, Emotional Status, and Quality of Life of Living Liver Donors in Taiwan

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ABSTRACT

Background. Living donor liver transplantation may put the donor at risk of physical and psychological impacts. Recovery of physical and psychological function as well as quality of life (QOL) in living liver donors warrants investigation.

Objectives. This study aims to examine the recovery of liver function, emotional status, and QOL in living liver donors through a comparison with the general population and reference values.

Methods. This descriptive, comparative study included 97 living liver donors who underwent surgery from 2008 to 2012 and were divided into 4 groups according to their postoperative period (1 year [n = 31], 2 years [n = 31], 3 years [n = 21], and 4 years above [n = 14]). Data were collected retrospectively in a medical center in northern Taiwan.

Results. The mean aspartate aminotransferase level was 20.2–32.1 U/L, the mean alanine aminotransferase level was 14.7–33.5 U/L, and the mean total bilirubin level was 10.8–15.5 μmol/L among the 4 groups. Among donors of the 4 groups, 23.8%–51.6% and 0%–29% were defined as having a mild level of anxiety and depression, respectively. Donors in the 1- and 2-year groups had poorer QOL in the physical function, role physical, vitality, and mental health domains than did the general population of Taiwan ($P < .05$).

Conclusions. Liver function was at normal levels in all 4 groups. The emotional and psychological function of living liver donors should be monitored and health-related QOL should be promoted during the first and second year after liver donation.

LIVING DONOR LIVER TRANSPLANTATION (LDLT) may have an impact on the donor's health status, including physical function, emotional/psychological function, and quality of life (QOL) [1,2]. The main goal of donor care is to restore donors' preoperative health status or to ensure that it is comparable with that of the general population [3–6]. Notably, health care professionals need to evaluate the donor's risk and recovery in terms of liver function as well as emotional status and QOL.

Studies had been shown that donor liver function, in terms of bilirubin, aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are worse immediately after surgery, but would recover to normal as the post-operative time progressed [3,5,7,8]. In a few cases, however, the liver donor may experience prolonged jaundice [9], and the AST level may be higher than baseline at 1 year after surgery [10]. Research on the emotional status of the donor after surgery has not been conclusive. Some studies report that the donor's emotional status was stable [2,4], whereas other studies have shown that emotional and psychological complications may appear beyond 1 year after surgery [3].

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With regard to QOL, some studies found that the QOL of donors was similar to or even better on some domains than that of the general population [6,11–13]. Nevertheless, there is inconsistency among the studies as to whether the physical domain or psychological domain was better than that of the general public. Thus, recovery of the living liver donor's liver, emotional/psychological function, and QOL warrant further investigation.

Comparing the donor's liver function, emotional status, and QOL with those of the general population or normal reference values is useful to understanding the context of recovery and to minimizing the risks and impacts of LDLT. Such results can provide the foundation for the informed consent and decision-making processes of living liver donors. Such results also can provide evidence for policy making and educational information. Thus, the purpose of this study was to compare the liver function, emotional/psychological status, and QOL of living liver donors with those of the general population and normal reference values.

MATERIAL AND METHODS

This descriptive, comparative study used self-administrated questionnaires and a medical record review to collect data retrospectively. From 2008 through 2012, 152 LDLT donors were followed in a medical center in northern Taiwan. Of the 152 donors, 26 could not be located during data collection. Of the 126 remaining donors, 114 agreed to participate, of whom 97 donors provided sufficient data (63.8% response rate). For comparison purposes, donors were categorized into 4 groups according the postoperative year. The first group was 1 year after the operation (n = 31), second was 2 years after the operation (n = 31), the third was 3 years after the operation (n = 21), and the fourth included those ≥4 years after the operation (n = 14). The study was approved by the research ethics committee of the study site (Approval No. 101-1735B).

AST, ALT, and total bilirubin level at 1 year postoperative for each donor were evaluated and recorded. The upper limit

Table 1. Demographic and Clinical Data of Living Liver Donor (n = 97)

Categories	Total, Mean ± SD or n (%)	I (n = 31), Mean ± SD or n (%)	II (n = 31), Mean ± SD or n (%)	III (n = 21), Mean ± SD or n (%)	IV (n = 14), Mean ± SD or n (%)
Age (y)	36.3 ± 9.7	34.3 ± 10.0	34.8 ± 8.2	36.9 ± 9.2	43.2 ± 10.5
BMI (kg/m^2)					
Preoperative	23.1 ± 2.6	22.6 ± 2.2	22.8 ± 2.2	21.3 ± 1.7	23.9 ± 2.5
Postoperative	23.2 ± 2.5	23.0 ± 2.6	22.1 ± 2.4	24.4 ± 1.9	22.6 ± 2.3
Body weight (kg)					
Preoperative	62.3 ± 9.7	62.6 ± 9.8	64.7 ± 9.9	58.0 ± 7.6	63.5 ± 10.9
Postoperative	63.7 ± 10.6	63.9 ± 11.2	65.1 ± 10.8	60.5 ± 9.4	65.6 ± 10.7
Graft weight (g)	610.9 ± 135.7	607.3 ± 122.8	640.4 ± 132.6	592.1 ± 112.1	582.1 ± 193.3
Gender					
Male	46 (47.4)	16 (51.6)	17 (54.8)	7 (33.3)	6 (42.9)
Female	51 (52.6)	15 (48.4)	14 (45.2)	14 (66.7)	8 (57.1)
Education					
Elementary	14 (14.4)	5 (16.1)	3 (9.7)	3 (14.3)	3 (21.4)
High school	28 (28.9)	8 (25.8)	8 (25.8)	7 (33.3)	5 (35.7)
College	55 (56.7)	18 (58.1)	20 (64.5)	11 (52.4)	6 (42.9)
Graft (lobe)					
Right	86 (86.7)	26 (83.9)	30 (96.8)	19 (90.5)	11 (78.6)
Left	11 (13.3)	5 (16.1)	1 (3.2)	2 (9.5)	3 (21.4)
Recipient is					
Parent	61 (62.9)	16 (51.6)	24 (77.4)	14 (66.7)	7 (50)
Spouse	17 (17.5)	7 (22.6)	2 (6.5)	3 (14.3)	5 (35.7)
Sibling	10 (10.3)	2 (6.5)	3 (9.6)	3 (14.3)	2 (14.3)
Children	5 (5.2)	3 (9.7)	1 (3.2)	1 (4.7)	0
Uncle/aunt	2 (2.1)	1 (3.2)	1 (3.2)	0	0
Sister-in-law	1 (1.0)	1 (3.2)	0	0	0
Uncle-in-law	1 (1.0)	1 (3.2)	0	0	0
Postoperative morbidity					
Hypertension	5 (5.1)	0	3 (9.7)	0	2 (14.3)
Eye problem	5 (5.1)	1 (3.2)	2 (6.5)	2 (9.5)	0
Infection	2 (2.1)	0	0	2 (9.5)	0
GI disturbance	28 (28.9)	6 (19.4)	10 (32.3)	8 (38.1)	4 (28.6)
Duodenal ulcer	1 (1.0)	1 (3.2)	0	0	0
Keloid	1 (1.0)	0	0	0	1 (7.1)
Wound pain	1 (1.0)	0	0	0	1 (7.1)
Urinary infection	2 (2.1)	0	0	2 (9.5)	0

Abbreviations: BMI, body mass index; GI, gastrointestinal.