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Case Report

Living Donor Liver Transplantation in an Elderly Recipient with Preserved Performance Status : A Case Report

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Abstract

Background : Living donor liver transplantation (LDLT) in an elderly recipient is controversial.

Case presentation : We report a case of LDLT in a 74-year-old female who had decompensated liver cirrhosis and hepatocellular carcinoma (HCC). She was the oldest recipient who received LDLT in Japan ever. She was rejected for LDLT at a nearby hospital because of her age. We decided to perform LDLT because her general condition was good (the Eastern Cooperative Oncology Group (ECOG) performance status 2). The surgery was uncomplicated and the postoperative course was uneventful, and the patient was discharged 35 days after the surgery. Currently she is living at home, and she has maintained a good quality of life.

Conclusions : We believe that a recipient in good general condition is capable of undergoing LDLT despite advanced age.

Keywords : living donor liver transplantation · Elderly recipient · Performance status

Introduction

Advances in the medical management of chronic liver diseases have resulted in increased life expectancy, leading to greater numbers of elderly patients with surgical indications for liver transplantation¹⁾. The recent increase in transplant candidates who are 65–70 years old, as reported by the National Center for Health Statistics in the United States²⁾, is remarkable. In Asian countries, religious, cultural, and political ideologies have presented significant obstacles to deceased donor organ transplantation³⁾⁴⁾. Even in Western countries, the use of living donors has

increased because of the imbalance between the supply of and demand for deceased donor organs⁵⁾⁶⁾. Thus, LDLT is becoming widely recognized as an acceptable treatment for decompensated liver disease⁷⁾. We have previously reported that recipients who were 60 years old or older can undergo LDLT with acceptable outcomes⁸⁾⁹⁾. In deceased donor liver transplantation (DDLT), good results can be obtained even in the elderly recipient if the patient's general condition is good¹⁰⁾. Therefore, LDLT is appropriate for elderly recipients if the outcomes are comparable to those for younger recipients, and if donor morbidity is acceptable. We report a case of

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Abbreviations : LDLT, living donor liver transplantation ; HCC, hepatocellular carcinoma ; ECOG, the Eastern Cooperative Oncology Group ; DDLT, deceased donor liver transplantation ; MELD, model for end-stage liver disease ; MRI, magnetic resonance imaging ; GV/SLV, graft volume/standard liver volume ratio ; POD, postoperative day ; CT, computed tomography ; ALT, alanine aminotransferase ; PT, prothrombin time ; T-Bil, total bilirubin.

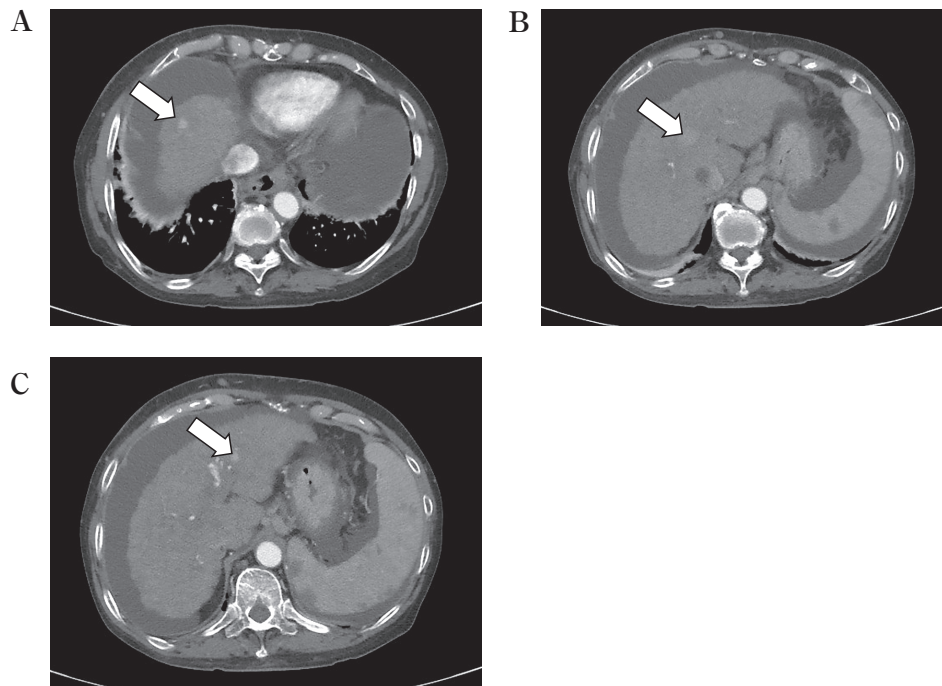


Fig. 1 Preoperative CT images of the liver. (A) HCC, segment 8 (arrowhead ; 11 mm) ; (B) HCC, segment 4 (arrowhead ; 18 mm) ; (C) HCC, segment 3 (arrowhead ; 13 mm).

an elderly recipient with a favorable outcome after LDLT.

Case presentation

The patient was a 74-year-old woman who was diagnosed with primary biliary cirrhosis on liver biopsy 17 years earlier. During follow-up, three hepatic masses were identified with maximum dimensions ranging from 10 to 18 mm, which were suspected HCC (Fig. 1). Because of her poor liver function, LDLT had been considered at nearby hospital ; however, the patient was rejected because of her age, and she was transferred to our facility. When she visited to our hospital, she could walk and eat meals by herself but could not carry out any work activities. On her evaluation, her performance status by the Eastern Cooperative Oncology Group (ECOG) was 2, and there was no evidence of dementia. The Child-Pugh score was 12 points (Child-Pugh class C), and the model for end-stage liver disease (MELD) score was 26 points (Table 1). Full systemic evaluation before the surgery revealed no abnormal findings in

cardiopulmonary function, by head MRI, or in gastrointestinal endoscopy. Because the HCC was within the Milan criteria for liver transplantation, we decided to perform LDLT. Her son volunteered to donate the left lobe of his liver.

The hepatic lobe graft volume/standard liver volume (GV/SLV) ratio was 29.5%. The graft was transplanted and simultaneous splenectomy was performed. The bile duct was reconstructed with duct-to-duct anastomosis. The operation time was 10 hours 22 minutes, and the estimated blood loss was 6,974 ml, for which 18 units of red cell concentrate, 16 units of fresh frozen plasma and 10 units of platelets were transfused.

The postoperative course of the recipient was uneventful. On postoperative day (POD) 1, she was extubated and began immunosuppressive drugs (Table 2). She returned to the general ward on POD 2. She started a meal *per os*, and she no longer needed supplemental oxygen on POD 3. She was able to walk on POD 4. The patient continued to show steady postoperative improvement including liver function, and she was

Table 1 Blood test findings on admission.

	Level	Units		Level	Units
WBC	4900	/ μ l	CEA	5.9	ng/ml
Hb	8.7	g/dl	CA19-9	29.0	U/ml
Ht	27.4	%	AFP	3.1	ng/ml
PLT	8.3×10^4	/ μ l	PIVKA II	332	mAU/ml
PT	33	%			
PT-INR	2.15		Anti-mitochondrial antibody positive		
APTT-T	51.2	sec	Child-Pugh C (12points) MELD 26points		
TP	6.2	g/dl			
Alb	3.3	g/dl			
T.Bil	20.0	mg/dl			
D.Bil	13.6	mg/dl			
AST	64	U/L			
ALT	30	U/L			
ALP	408	U/L			
γ -GTP	48	U/L			
BUN	16	mg/dl			
Cr	0.69	mg/dl			
CRP	1.52	mg/dl			
HbA1c	3.7	%			

Table 2 Postoperative immunosuppressive agent.

Day	MMF	FK506	PSL
POD1	1500mg	-/-	200mg
POD2	3000mg	2mg/2mg	160mg
POD3	2500mg	2mg/2mg	120mg
POD4	2000mg	2mg/1.5mg	80mg
POD5	2000mg	1.5mg/1.5mg	40mg
POD6	2000mg	1.5mg/1.5mg	20mg
POD10	1000mg	1.5mg/1.5mg	20mg
POD12	1000mg	1.5mg/2mg	20mg
POD13	1000mg	2mg/2mg	20mg
POD14	1000mg	1.5mg/3mg	20mg
POD15	1000mg	3mg/3mg	20mg
POD18	1000mg	3mg/3mg	10mg
POD19	0mg	3mg/3mg	10mg
POD20	0mg	3mg/2mg	5mg
POD21	0mg	2mg/2mg	5mg
POD30	0mg	2mg/1.5mg	5mg
POD31-	0mg	1.5mg/1.5mg	5mg

MMF, Mycophenolate mofetil ; FK506, Tacrolimus ; PSL, prednisolone

discharged 35 days after the surgery (Fig. 2). Also, the postoperative course of the donor was good and he was discharged 8 days after the surgery.

Discussion

Recent studies on LDLT suggest favorable long-term survival results¹¹⁾, and its appropriateness for elderly recipients should be discussed. It

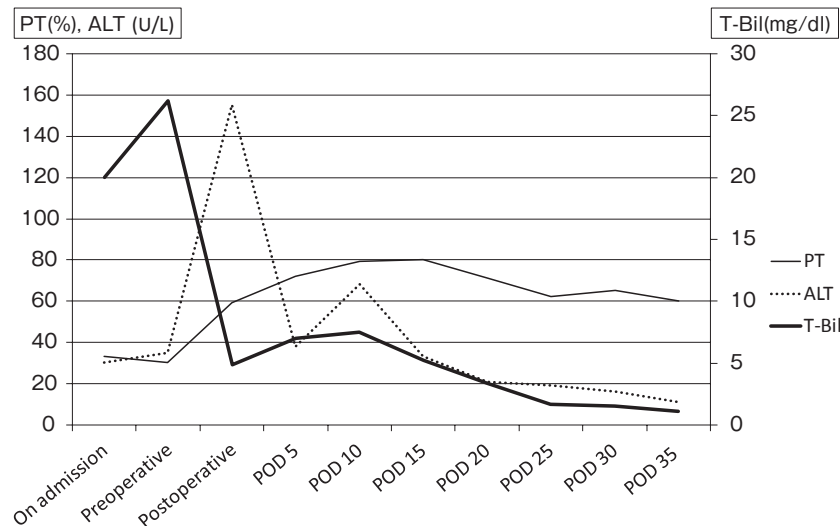


Fig. 2 Pre- and postoperative course of the recipient. She was extubated on POD 1. She returned to the general ward on POD 2. She started a meal *per os* on POD 3. She was able to walk on POD 4.

is well accepted that the graft quality (including the graft size and the donor age), and the recipient condition (including the patient status, the MELD score, and the extent of portal hypertension), are determinants of recipient outcomes¹²⁾. A recipient eligible for LDLT needs to satisfy additional criteria: that there is no uncontrollable malignancy or active infection in any organ except for the liver. We have reported that advanced donor age, recipient hospitalization, and a high MELD score were among the risk factors for postoperative primary graft dysfunction¹³⁾. In that study, all of the donors for the elderly recipients were their children. Therefore, the donors were relatively young, in their 30s or 40s, and had good liver function. Moreover, the elderly recipients had a smaller body size with a smaller SLV, resulting in a greater likelihood of an acceptable GV/SLV ratio despite a smaller GV. The recipient condition is the main determinant of the indication for LDLT in elderly patients. Even without accounting for recipient age, we found hospitalization and a high MELD score to be significant risk factors for graft dysfunction and mortality¹³⁾. Importantly, pre-transplant patient evaluation to determine the optimal timing of liver transplantation and careful donor selection may provide better

survival outcomes for LDLT. Because the opportunity to schedule surgery is one of the biggest advantages of LDLT over DDLT, a meticulous patient and donor selection process may yield the most immediate and significant improvements in the survival of LDLT recipients.

In conclusion, if performance status is preserved, the elderly recipient can be a candidate for LDLT and have a favorable outcome.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

TY, SI, NH, TI and HU underwent the operation. TY and NH determined the treatment plan. TS and TY prepared the manuscript and the literature search. YM gave the final approval of the version to be published. All authors read and approved the final manuscript.

References

- 1) Lipshutz GS, Hiatt J, Ghobrial RM, Farmer DG, Martinez MM, Yersiz H, Gornbein J and Busuttill RW : Outcome of liver transplantation in septuagenarians : A single-center experience. *Arch Surg.* 142 : 775-784, 2007.
- 2) Schwartz JJ, Pappas L, Thiesset HF, Vargas G, Sorensen JB, Kim RD, Hutson WR, Boucher K and Box T : Liver transplantation in septuagenarians receiving model for end-stage liver disease exception points for hepatocellular carcinoma : the national experience. *Liver Transpl.* 18 : 423-433, 2012.
- 3) Ninomiya M, Shirabe K, Facciuto ME, Schwartz ME, Florman SS, Yoshizumi T, Harimoto N, Ikegami T, Uchiyama H and Maehara Y : Comparative study of living and deceased donor liver transplantation as a treatment for hepatocellular carcinoma. *J Am Coll Surg.* 220 : 297-304, 2015.
- 4) Yoshizumi T, Ikegami T, Bekki Y, Ninomiya M, Uchiyama H, Iguchi T, Yamashita Y, Kawanaka H, Shirabe K and Maehara Y : Re-evaluation of the predictive score for 6-month graft survival in living donor liver transplantation in the modern era. *Liver Transpl.* 20 : 323-332, 2014.
- 5) Uchiyama H, Shirabe K, Kimura K, Yoshizumi T, Ikegami T, Harimoto N and Maehara Y : Outcomes of adult-to-adult living donor liver transplantation in 321 recipients. *Liver Transpl.* 22 : 305-315, 2016.
- 6) Yoshizumi T, Shirabe K, Soejima Y, Taketomi A, Ikegami T, Uchiyama H, Harada N, Ijichi H and Maehara Y : Living donor liver transplantation in patients who have received pretransplant treatment for hepatocellular carcinoma. *Transplantation.* 91 : e61-62, 2011.
- 7) Morioka D, Egawa H, Kasahara M, Ito T, Haga H, Takada Y, Shimada H and Tanaka K : Outcomes of Adult-to-Adult Living Donor Liver Transplantation. *Ann Surg.* 245 : 315-325, 2007.
- 8) Yoshizumi T, Shirabe K, Soejima Y, Taketomi A, Yamashita N, Ikegami T, Uchiyama H, Kayashima H, Ninomiya M and Maehara Y : Living donor liver transplantation in patients older than 60 years. *Transplantation.* 90 : 433-437, 2010.
- 9) Ikegami T, Bekki Y, Imai D, Yoshizumi T, Ninomiya M, Hayashi H, Yamashita Y, Uchiyama H, Shirabe K and Maehara Y : Clinical Outcomes of Living Donor Liver Transplantation for Patients 65 Years Old or Older With Preserved Performance Status. *Liver Transpl.* 20 : 408-415, 2014.
- 10) Cross TJ, Antoniadou CG, Muijsan P, Al-Chalabi T, Aluvihare V, Agarwal K, Portmann BC, Rela M, Heaton ND, O'Grady JG and Heneghan MA : Liver transplantation in patients over 60 and 65 years : an evaluation of long-term outcomes and survival. *Liver Transpl.* 13 : 1382-1388, 2007.
- 11) Lo CM, Fan ST, Liu CL, Chan SC and Wong J : The role and limitation of living donor liver transplantation for hepatocellular carcinoma. *Liver Transpl.* 3 : 440-447, 2004.
- 12) Kiuchi T, Onishi Y and Nakamura T : Small-for-size graft : Not defined solely by being small for size. *Liver Transpl.* 16 : 815-817, 2010.
- 13) Ikegami T, Shirabe K, Yoshizumi T, Aishima S, Taketomi YA, Soejima Y, Uchiyama H, Kayashima H, Toshima T and Maehara Y : Primary graft dysfunction after living donor liver transplantation is characterized by delayed functional hyperbilirubinemia. *Am J Transplant.* 12 : 1886-1897, 2012.

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(和文抄録)

高齢者の非代償性肝硬変に対して生体肝移植を施行し得た 1 例

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原田 昇, 播本 憲史, 池上 徹, 内山 秀昭, 副島 雄二, 前原 喜彦

【はじめに】 高齢者に生体肝移植を行うべきかどうかについては, 議論のあるところである.

【症例】 74 歳女性. 検診で肝機能異常を指摘され, 原発性胆汁性肝硬変と診断, 経過観察されていた. その後肝予備能が低下し, 他院にて生体肝移植が検討されたが, 70 歳を超えていたため適応外とされた. 当院では 70 歳以上の肝移植症例の経験もあり, レシピエントの全身状態が良好であったこと (PS2), グラフト条件も満たしていたことから, 生体肝移植可能と判断し, 生体肝移植術 (拡大左葉グラフト) 施行. 術後経過は概ね良好で, 術後 35 日目退院となった. 現在も在宅・生存中であり, 非常に良好な QOL を維持している.

【考察】 生体肝移植は, 高齢レシピエントに対しても PS が保たれている場合は, 安全に施行出来る可能性が高く, 良好な術後成績を得られると考える.