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Japanese national survey on declined liver allografts from brain-dead donors: high decline rate but promising outcomes in allografts with moderate steatosis

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Introduction: Liver allografts from brain-dead donors which were declined and eventually not transplanted due to accompanying marginal factors have never been surveyed in Japan. We surveyed and characterized the declined allografts and discussed the graft potential focusing on various marginal factors.

Methods: We collected data on brain-dead donors between 1999 and 2019 from the Japan Organ Transplant Network. We divided their liver allografts into declined (non-transplanted) and transplanted ones, and then characterized declined ones focusing on their time points of decline and accompanying marginal factors. For each marginal factor, we calculated the decline rate from the number of declined and transplanted allografts and assessed the 1-year graft survival rate from transplanted allografts.

Results: A total of 571 potential liver allografts were divided into 84 (14.7%) declined and 487 (85.3%) transplanted ones. In the declined allografts, a majority was declined after laparotomy ($n = 55$, 65.5%), most of which had steatosis and/or fibrosis ($n = 52$). Out of the moderately steatotic (without $>F2$ fibrosis) allografts ($n = 33$), 21 were declined and 12 were transplanted, leading to 63.6% of decline rate. The latter 12 achieved a 92.3% of 1-year graft survival rate after transplanted. Comparison of representative features showed no significant difference between these declined and transplanted allografts. Moderately fibrotic allografts (without $>30\%$ steatosis) ($n = 12$) also showed a high decline rate (58.3%) and a comparable 1-year graft survival rate (83.3%), but the transplanted grafts did not include elderly (>60 years) donors.

Conclusion: Pathological abnormalities of steatosis/fibrosis seem the most common donor factor leading to graft decline in Japan. Especially, allografts with moderate steatosis were highly declined but transplanted ones achieved promising outcomes. This national survey may highlight the possible potential of liver allografts with moderate steatosis.