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Impact of graft weight change during perfusion on hepatocellular carcinoma recurrence after living donor liver transplantation

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Introduction: Inadequate liver volume and weight is a major source of morbidity and mortality after adult living donor liver transplantation (LDLT). The purpose of our study was to investigate HCC recurrence, graft failure, and patient survival according to change in right liver graft weight after histidine-tryptophan-ketoglutarate (HTK) solution perfusion in LDLT.

Methods: Two hundred twenty-eight patients underwent LDLT between 2013 and 2017. We calculated the change in graft weight by subtracting pre-perfusion graft weight from post-perfusion graft weight. Patients with increased graft weight were defined as the positive group, and patients with decreased graft weight were defined as the negative group.

Results: After excluding patients who did not meet study criteria, 148 patients underwent right or extended right hepatectomy. The negative group included 89 patients (60.1%), and the positive group included 59 patients (39.9%). Median graft weight change was -28 g (range, -132–0 g) in the negative group and 21 g (range, 1–63 g) in the positive group ($p < 0.001$). Median hospitalization time was longer for the positive group than the negative group (27 days vs. 23 days; $p = 0.048$). There were no statistical differences in tumor characteristics, postoperative complications, early allograft dysfunction, or acute rejection between the two groups. Disease-free survival, death-censored graft survival, and patient survival were lower in the positive group than the negative group. Additionally, the positive group showed strong association with HCC recurrence, death-censored graft survival, and patient survival in multivariate analysis.

Conclusions: This study suggests that positive graft weight change during HTK solution perfusion indicates poor prognosis in LDLT.

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