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Effect of intraoperative continuous renal replacement therapy on liver transplant recipient outcomes

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Objectives : Continuous renal replacement therapy (CRRT) is used to treat transplant recipients with kidney dysfunction before or after liver transplantation (LT). CRRT provides enhanced hemodynamic tolerance, better control of cerebral edema, metabolic, electrolyte acid-base imbalances, and uremic conditions. However, there was a lack of evidence to support use of intraoperative CRRT (IOCRRT) during surgery. We investigated the effects of IOCRRT on outcomes in LT recipients.
Methods : We performed a retrospective observational study at Korea University Anam Hospital in Korea. A total 93 patients who underwent LT between January 2016 and September 2023 were analyzed. Perioperative and demographic data, laboratory measures, and data on renal recovery and survival were collected. Patients were classified into the IOCRRT and non-IOCRRT groups. Inverse probability weighting was used for risk adjustment.
Results : Mean Model for End-Stage Liver Disease score was 31, 70% were male, and the most common indications for LT were alcoholic (51.6%) and hepatitis (23.7%) cirrhosis. Of 93 patients, 33 (35.5%) recipients received intraoperative CRRT. The IOCRRT group received more vasopressor and ventilator care before LT compared to the non-IOCRRT group. Despite a prolonged surgical time in the IOCRRT group, parameters such as blood loss and transfusion during LT and postoperative complications were comparable to the non-IOCRRT group. During the follow-up period, no significant differences in renal functions (eGFR) at 3 months post-LT were observed between the two groups. Maintenance dialysis rates remained similar, even with CRRT continuation in 6.8 and 4.6% respectively. Notably, there were no substantial differences in mortality and graft failure between the IOCRRT and non-IOCRRT groups.
Conclusions : The IOCRRT during LT is achievable and safe. This intervention may assist patients with severe liver failure and concomitant kidney dysfunction in tolerating LT procedures, ultimately leading to comparable short-term clinical outcomes.