Efficacy and renal tolerability of ultrafiltration in acute decompensated heart failure

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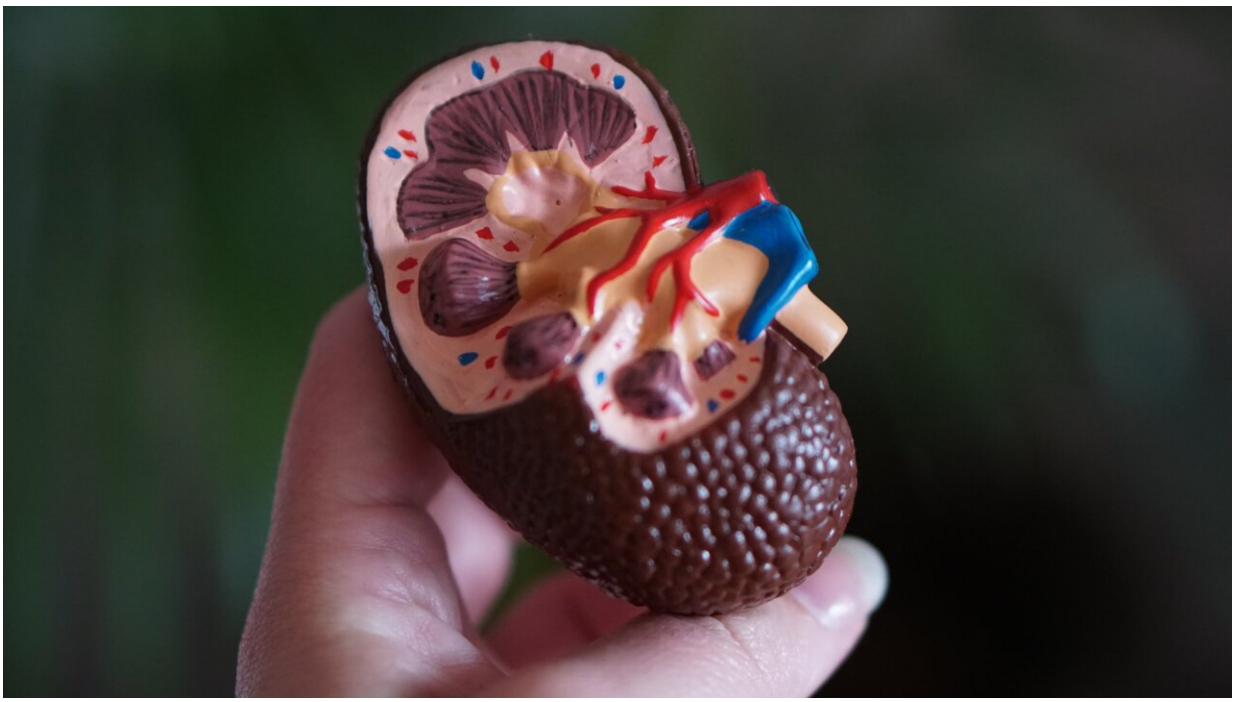

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In a new publication from *Cardiovascular Innovations and Applications*, Yajie Liu and Xin Yuan from the Second Affiliated Hospital of Chongqing Medical University, Chongqing, China, consider the efficacy and renal tolerability of ultrafiltration in acute decompensated heart

failure.

Acute decompensated heart failure (ADHF) is a life-threatening and costly disease. Controversy remains regarding the efficacy and renal tolerability of ultrafiltration for treating ADHF. The authors of this article carried out meta-analysis to evaluate this clinical issue.

A search of PubMed, EMBASE, and the Cochrane database of controlled trials was performed from inception to March 2021 for relevant randomized controlled trials. The quality of the included trials and outcomes was evaluated with the use of the risk of bias assessment tool and the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach, respectively. The risk ratio and the standardized mean difference (SMD) or weighted mean difference (WMD) were computed and pooled with fixed-effects or random-effects models.

The meta-analysis included 19 studies involving 1281 patients. Ultrafiltration was superior to the control treatments for weight loss (WMD 1.24 kg, 95% confidence interval [CI] 0.38–2.09 kg, P = 0.004) and fluid removal (WMD 1.55 L, 95% CI 0.51–2.59 l, P = 0.003) and was associated with a significant increase in serum creatinine level compared with the control treatments (SMD 0.15 mg/dL, 95% CI 0.00–0.30 mg/dL, P = 0.04). However, no significant effects were found for serum N-terminal prohormone of brain natriuretic peptide level, length of hospital stay, all-cause mortality, or all-cause rehospitalization in the ultrafiltration group.

The use of ultrafiltration in patients with ADHF is superior to the use of the control treatments for weight loss and fluid removal but has adverse renal effects and lacks significant effects on long-term prognosis, indicating that this approach to decongestion in ADHF patients is efficient for fluid management but less safe renally.

More information: Xin Yuan, Efficacy and Renal Tolerability of Ultrafiltration in Acute Decompensated Heart Failure: A Meta-analysis and Systematic Review of 19 Randomized Controlled Trials, *Cardiovascular Innovations and Applications* (2021). DOI: 10.15212/CVIA.2021.0020