

Comparison Between Conventional Ultrafiltration Combined with Modified Ultrafiltration and Conventional Ultrafiltration Only for Adult Open-heart Surgery: Perspective from Systemic Inflammation, Vascular Resistance, and Cardiac Index

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Abstract : Background: Conventional ultrafiltration (CUF) system was shown to be helpful in reducing anti-inflammatory mediators for patients who underwent open heart surgery. Additionally, modified ultrafiltration (MUF) has been shown to reduce anti-inflammatory mediators further while reducing interstitial fluid volume at the same time. However, there has been minimal data concerning the efficacy of combining both ultrafiltration methods. This study aims to compare inflammation marker, vascular resistance, and cardiac index on CUF+MUF patients with CUF only patients undergoing open heart surgery. Method: This is a single blind randomized controlled trial on patients undergoing open heart surgery between June 2021 - October 2021 in CiptoMangunkusumo National Referral Hospital and Jakarta Heart Hospital. Patients wererandomized using block randomization into modified ultrafiltration following conventional ultrafiltration (CUF+MUF) and conventional ultrafiltration (CUF) only. Outcome assessed in this study were 24-hoursinterleukin-6 levels, systemic vascular resistance (SVR), pulmonary vascular resistance (PVR), and cardiac index. Results: A total of 38patients were included (19 CUF+MUF and 19 CUF subjects). There was no difference in postoperative IL-6 level between groups ($p > 0.05$).No difference in PVR was observed between groups.Higher difference in SVR was observed in CUF+MUF group (-646 vs. -261dyn/s/cm-5, $p < 0.05$). Higher cardiac index was observed on CUF+MUF group (0.93 vs. 0.48, $p < 0.05$). Conclusion: Patients undergoing open heart surgery with modified ultrafiltration following conventional ultrafiltration had similar systemic inflammatory response and better cardiac response than those having conventional ultrafiltration.

Keywords : open-heart, CUF, MUF, SVR, PVR, IL-6

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