



Slow Low-Efficiency Dialysis in Children

Mukta Mantan¹

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Acute kidney injury (AKI) occurs frequently in hospitalized children, especially in the setting of critical illness (30–60%), and is associated with poor outcomes [1]. Such patients may need immediate kidney replacement therapy (KRT; dialysis) since AKI is potentially accompanied by lethal complications, such as severe fluid overload, electrolyte disturbances, and acidosis. As most of these patients are hemodynamically unstable due to shock, sepsis, and ventilation, they need gentle dialysis procedures like continuous renal replacement therapy (CRRT). The most important advantage of CRRT is gradual solute and fluid removal, mimicking renal functions and physiology while awaiting renal recovery. After its first pediatric use in 1985, CRRT is being used to treat sick patients in PICUs worldwide, with continuous venovenous hemodiafiltration (CVVHD) being the most common type recommended. However, the need for more sophisticated equipment, manpower, and prolonged anticoagulation limits its availability, especially in resource-poor settings. Gentle dialysis modalities like slow low-efficiency dialysis (SLED), which can be delivered with the existing hemodialysis machines, are emerging as more preferred techniques, though the advantages of CVVHD like the removal of cytokines and inflammatory proteins are lacking. While a meta-analysis in adults showed SLED to have similar outcomes as CRRT in sick patients [2], comparative data from pediatric studies are lacking. In a retrospective study from Turkey on CRRT in children ($n=50$), the most used modality was CVVHD in 72%, and the most common indications for therapy were fluid overload and AKI [3].

In this issue of the Journal, Yadav et al. have prospectively looked at the feasibility and outcomes of SLED in 18 patients (94% with underlying sepsis) admitted to the PICU who underwent 41 sessions of treatment. The therapy was feasible within 12 h of the indication in a majority (88.9%), fluid overload in 61%, electrolyte imbalance in 22%, and acidosis in 17%

were the chief indications, and none of the sessions were terminated before 6 h. While the feasibility and safety of the procedure were satisfactory, the overall mortality rate of 77.8% was rather high. This could be primarily due to the underlying etiology of sepsis and multiorgan failure in most patients [4]. A previous retrospective study from four Indian pediatric nephrology centers ($n=68$) reported an overall mortality of 42.6% amongst children who underwent SLED; 55.8% children had underlying sepsis [5]. Another Korean series on the use of CRRT in children over a 14-y period reported a mortality of 70% [6]. This possibly points towards a more careful selection of patients in the PICU who could benefit from the procedure.

Declarations

Conflict of Interest None.

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✉ Mukta Mantan
muktamantan@hotmail.com

¹ Department of Pediatrics, Maulana Azad Medical College, New Delhi 110002, India