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A neonate with severe oligo-anuric renal failure during multi-organ failure survived with prolonged renal replacement therapy

Sir,

Here, we report a neonate with severe oligo-anuric renal failure during multi-organ failure who survived with prolonged renal replacement therapy.

A female neonate, born at a gestational age of 39 weeks and 3 days, weighing 2780 gram, presented cyanosis on Day 15. She developed anuria and respiratory arrest,

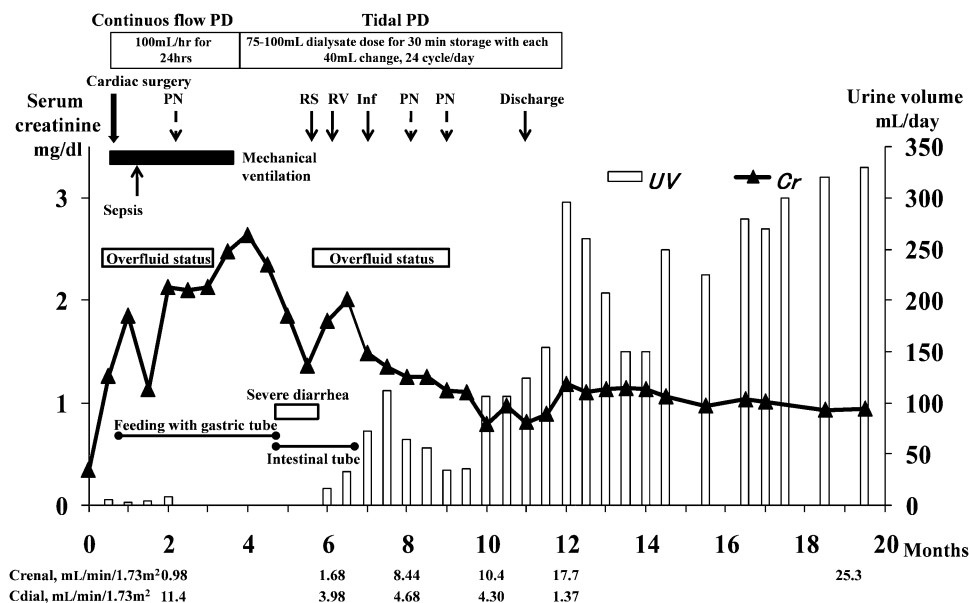


Fig. 1. Course of the illness in the neonate. Cdial, dialytic clearance; Cr, creatinine; Crenal, renal clearance; Inf, influenza A virus infection; PN, peritonitis; RS, respiratory syncytial virus infection; RV, rotavirus infection; UV, urine volume.

requiring mechanical ventilation. Blood pressure was 39/24 mmHg. She was diagnosed as having interrupted aortic arch, requiring surgery (Figure 1). Serum creatinine increased from 0.34 to 1.26 mg/dL. Continuous-flow peritoneal dialysis (PD), using two catheters for dialysate infusion and drainage simultaneously, was started. She had septicemia, which was controlled with antibiotics. After surgery, chylous effusion occurred in the thorax, resulting in pleural effusion and edema. At ~2 months, she passed small volumes of urine output with renal and dialytic clearances of 0.98 and 11.45 mL/min/1.73 m², respectively. Ligation of the thoracic duct was performed at 2.5 months. Overfluid status continued till 3 months, requiring PD and mechanical ventilation.

Because of frequent vomiting, she was fed with an intestinal tube at 4.5 months, resulting in severe diarrhea for 1 month. She remained anuric at 5 months despite decreased serum creatinine (1.36 mg/dL) due to malnutrition. Renal clearance was 1.68 mL/min/1.73 m² at 6 months when urine output was redetected. She had episodes of peritonitis and virus infections, resulting in pleural effusion, requiring antibiotics, supportive therapy and PD. Renal clearance increased to 8.44 mL/min/1.73 m² at 8 months. Urine output increased with serum creatinine of 0.81–1.2 mg/dL and renal clearance of 10.4 mL/min/1.73 m² at 10 months, representing almost 50% of total clearance. Dialysis was stopped 1 year after surgery. Her growth and development are normal with glomerular filtration rate of 24.7 mL/min/1.73 m².

Prolonged oligo-anuria correlates with the final outcome [1]. Renal function recovered after 6–14 months of oliguria in two children with hemolytic uremic syndrome (HUS), in whom plasma infusion prolonged acute renal failure (ARF) [2], and after 23 days of oliguria in an infant with HUS, at the age of 23 weeks [3].

Younger age is another poor prognostic factor of ARF [4]. Neonates have a decreased number and function of nephron,

resulting in severe renal insult and poor outcome [5]. ARF occurs in 8% of neonates in the intensive care unit, and its mortality rate is 48% [4], depending on the underlying disease and prognostic factors, including respiratory support, hypotension, cardiac disorders, surgery, oliguria/anuria, need for vasopressor drugs or dialysis, sepsis or multi-organ failure [1]. Despite these factors, the renal function of our patient returned to an extent that allowed cessation of dialysis after many months although PD might have been stopped late. Our patient still has significant chronic kidney disease and will require renal replacement therapy again in the future. Our observation suggests that neonates with severe oligo-anuric renal failure during multi-organ failure may survive with prolonged renal replacement therapy.

Conflict of interest statement. None declared.

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