

# THE PROGNOSTIC FACTORS FOR MORTALITY IN CHILDREN RECEIVING CONTINUOUS RENAL REPLACEMENT THERAPY IN PEDIATRIC INTENSIVE CARE UNIT



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## Introduction

Continuous renal replacement therapy (CRRT) is an important modality of treatment in critically ill patients. Our aim was identifying prognostic factors for mortality in critically-ill children receiving continuous renal replacement therapy.

## Material and Method

Patients who received CRRT between 2008 and 2013 in pediatric intensive care unit (PICU) of Tepecik Teaching and Research Hospital from Izmir-Turkey were evaluated.

## Results

- 25 patients (median age: 96 month; range: 2.5-216 month; male/female: 15/10) who received CRRT were enrolled the study.
- 20 children (80%) have underlying chronic disease.
- The indications for CRRT were
  - Acute renal failure plus volume overload unresponsive to other therapies (15 patients, 60%),
  - Acute renal failure (8 patients, 32%),
  - Volume overload (1 patient, 4%),
  - Removal of toxins, metabolites/correction of severe acidosis (1 patient, 4%),
- Continuous venovenous haemodiafiltration were used in 24 patients (96%),
- Continuous venovenous hemodialysis were used in 1 patient (4%),
- 13 patients (52%) were died.
- There were significant differences in between survivors and non-survivors
  - Pediatric Risk of mortality III (PRISM III; 21 points vs. 22 points) score, ( $p < 0.05$ ).
  - Pediatric Logistic Organ failure (PELOD; 31 points vs. 33 points) score, ( $p < 0.05$ ).
  - Number of organ failure (4 organs vs. 6 organs), ( $p < 0.05$ ).
  - The rate of cardiovascular failure (7 vs. 13), ( $p < 0.05$ ).
  - The rate of hepatic failure (3 vs. 9) ( $p < 0.05$ ).

## Conclusion

**In survivors, the higher PRISM III and PELOD scores, the higher number of organ failure, presence of heart failure and hepatic failure were important prognostic factors for mortality for children received CRRT in PICU**

Table 1. Underlying disease

Disease	n	%
Septic shock	15	60
Pulmonary haemorrhage	1	4
Congenital metabolic disease	1	4
Oncologic disease	1	4
Post- cardiac surgery	1	4
Renal disease	2	8
Neurologic disease	2	8
HUS / TTP	2	8
Total	25	100

Table 2. Indications for CRRT

Indications	n	%
Renal failure	8	32
Fluid overload	1	4
Removal of toxins (metabolic disease)	1	4
Renal failure + fluid overload	15	60

Table 3. Differences in between survivors and non-survivors

	Survivors n=12	Non-survivors n=13	p
Sex ( F/ M)	5/7	5/8	1.000
Age (month)	156	78	0.852
Weight (kg)	40	20	0.437
<b>PIM (%)</b>	<b>61.2</b>	<b>72</b>	<b>0.014</b>
<b>PRISM score</b>	<b>21</b>	<b>22</b>	<b>0.014</b>
<b>PELOD score</b>	<b>30</b>	<b>32</b>	<b>0.001</b>
Chronic renal disease (n)	5	5	1.000
Chronic disease (n)	9	11	0.645
Presence of sepsis (n)	4	12	0.004
<b>Number of organ failure (n)</b>	<b>4</b>	<b>6</b>	<b>0.001</b>
<b>Cardiac failure (n)</b>	<b>7</b>	<b>13</b>	<b>0.015</b>
Renal failure (n)	12	13	0.480
<b>Hepatic failure (n)</b>	<b>3</b>	<b>9</b>	<b>0.027</b>
Pulmonary failure (n)	12	13	0.480
Neurologic failure (n)	9	12	0.322
Hematologic failure (n)	5	10	0.111
Intubated/ventilated (n)	10	13	0.220
<b>Received dopamine (n)</b>	<b>7</b>	<b>13</b>	<b>0.015</b>
Inotropic score (n)	37	30	0.817
Pre-CRRT urea (n)	56	53	0.650
Pre-CRRT creatinine (n)	3.4	2	0.123
Pre-CRRT CrCl (n)	22	37	0.186
Fluid overload (%)	8	11	0.098
Dose of heparin (u/kg/h)	7.7	8	0.811
<b>Use of heparin</b>	<b>10</b>	<b>3</b>	<b>0.03</b>
Time to initiate CRRT (hours)	4	5	0.470
Duration of CRRT (days)	5	2	0.052
Filter life span (hours)	42	24	0.137

