Advantage and Disadvantage of CRRT

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CRRT

Background

Continuous renal replacement therapy (CRRT) has been established as the gold standard for management of critically ill pediatric patients with AKI.
CRRT

• Prospective Pediatric CRRT (ppCRRT) Registry, has been instrumental in describing demographics, outcomes, and practice patterns for pediatric CRRT and has established CRRT as a safe and effective therapy in pediatric AKI.

• (standardization of Ped. AKI definition, new generation of scale based machines, lung protective ventilation strategies, sepsis care bundles, improvement in mechanical support device technology).

• In fact, pediatric critical illness mortality has decreased from 4.6% in the 1990s to a current rate of 2.4%
CRRT

✓ The term CRRT generally refers to 1 of 3 treatment modalities:
✓ Continuous venovenous hemodialysis (CVVHD), continuous venovenous hemofiltration (CVVH), Continuous venovenous hemodiafiltration (CVVHDF) but applies to any modality which is continuous (such as PD).
✓ The term “slow low efficiency daily dialysis” (SLEDD) refers to performing continuous hemodialysis using standard IHD machinery.
✓ Mechanism of solute removal Filtration (convection) versus dialysis (diffusion).
**CRRT in ICU Indications**

**Acute kidney injury with:**

- Fluid overload (refractory to diuretics)
- Hyperkalemia. (> 6.5).
- Severe metabolic acidosis (pH < 7.1)
- Rapidly climbing urea/creatinine (or urea > 30mmol/dl, Creat > 300umol/L).
- Symptomatic uraemia (encephalopathy, pericarditis, bleeding, nausea, pruritus Oliguria/anuria).
- Electrolytes abnormality.
- Acute and chronic liver failure.
- Crush syndrome.
**CRRT in ICU Indications**

- Drug over dose with dialyzable toxin (water-soluble and not highly protein bound).
- Lithium intoxication.
- Hypercatabolism.
- Increase intracranial pressure, brain edema.
- Cerebral edema.
Severe sepsis:

✓ Hemofiltration to remove inflammatory mediators in sepsis/septic shock.

✓ High volume haemofiltration (40-85ml/ kg/hr) may reduce vasopressor requirements and possibly improve survival in patients with septic shock irrespective of whether they have an AKI.

✓ Requiring large amount of Fluids, Parenteral nutrition, Blood products, Cardiac failure, vasopressor, parenteral medication, antibiotic.

✓ Core temperature > 39.5 C, or < 30 <.

✓ Cardiopulmonary by pass.
Contraindication of CRRT

✓ Declines CRRT.
✓ Inability to establish vascular access.
✓ Lack of inappropriate infrastructural and trained personnel of CRRT.
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<td>Short treatment times</td>
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<td>Peritoneal dialysis</td>
<td>No need for vascular access</td>
<td>Less efficient than hemodialysis or continuous renal replacement therapy</td>
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<td></td>
<td>Feasible in small infants</td>
<td>Variable ultrafiltration dependent on blood pressure</td>
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<td>Continuous treatment</td>
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<td>Continuous renal replacement therapy</td>
<td>Accurate ultrafiltration that can be altered to account for changes in intake/patient blood pressure</td>
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<td>Smaller circuit volumes</td>
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