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From Aquapheresis to CVVH

Adaptation of a Small-Volume Circuit

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WHY DO WE USE RENAL REPLACEMENT THERAPY?

- To adjust the amount of fluid in the body
- To adjust plasma composition

AQUAPHERESIS BY SLOW CONTINUOUS ULTRAFILTRATION

- Aquapheresis
 - Latin and Greek → “Taking away water”
 - Wikipedia → *“A medical technology designed to remove excess salt and water from the body safely, predictably, and effectively from patients suffering from a condition called fluid overload.”*
- SCUF
 - A method to remove excess fluid exclusively through ultrafiltration, without fluid substitution.

AQUAPHERESIS BY SLOW CONTINUOUS ULTRAFILTRATION

- Adjusting the amount of fluid in the body, without adjusting plasma composition

SMALL VOLUME FILTERS

Extracorporeal Volume (ECV)

- Prismaflex M60 = 93 mL
- NIDUS (Newcastle Infant Dialysis Ultrafiltration System) = 6.5 mL
- CARPEDIEM™ (Cardiac And Renal Pediatric Dialysis Emergency)
 - 27 mL
 - 34 mL
 - 45 mL
- Aquadex™ = 33 mL

Surface Area

- Prismaflex M60 = 0.6 m²
- NIDUS (Newcastle Infant Dialysis Ultrafiltration System) = 0.045 m²
- CARPEDIEM™ (Cardiac And Renal Pediatric Dialysis Emergency)
 - 0.075 m²
 - 0.15 m²
 - 0.25 m²
- Aquadex™ = 0.12 m²

AQUADEX™

- Roller blood pump provides negative pressure through the line
 - Runs 10-40 mL/min: Increments of 5
- 2nd (UF) pump provides negative pressure on the hemofilter
 - Runs 0-500 mL/hr: Increments of 10
- 2 pigtails: Pre and post-filter
 - Heparin anticoagulation
- No countercurrent dialysis port

ADAPTATION THROUGH ULTRAFILTRATION RATE



“If there is no struggle, there is no progress.”

Frederick Douglass

Pro's

- Small ECV avoids blood prime in patients up to 4 kg
- Able to use smaller caliber vascular access
- Anecdotal reliance on less heparin

Con's

- No countercurrent dialysis
- Blood, Fluid replacement, Heparin pumps not integrated
- Continuous circuit will automatically shut off after 72 hours

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Thank you for your attention!