Lecture of Renal replacement therapy {1}

Dr. Reham Mohamed Shaker

South Valley University

DEFINITION

- Renal replacement therapy is a therapy that replaces the normal blood filtering functioning of the kidneys.
- It is used when the kidneys are not functioning well i.e in conditions like Acute or Chronic Kidney Disease.

❖ MODALITIES OF RRT

- HEMODIALYSIS
- PERITONEAL DIALYSIS
- RENAL TRANSPLANTATION

DIALYSIS

- All dialyses modalities can be used to ensure equivalent solute clearence and ultrafiltration.
- Choice of procedure depends on

a) Age & size of the patient
b) Cardiovascular status
c) Availability of vascular status
d) Integrity of peritoneal membrane and abdominal cavity.
e) Expertise available.

Indications of Dialysis in AKI

- Uremia
- Hyperkalemia
- Hyponatremia
- Fluid overload
- Metabolic Acidosis
- Hypercatabolic state

Indications in CKD

- GFR <15ml/min/1.73m2 BSA.
- Growth Failure
- Severe HTN
- Intractable intravascular volume overload
- Profound electrolyte abnormalities

{hyperkalemia , hyperphosphatemia etc.}

ACUTE PERITONEAL DIALYSIS

- **ULTRAFILTRATION :**

Exchange of solutes and movement of fluid across the semipermeable peritoneal membrane.

- **DIFFUSIVE TRANSPORT :**

Solutes are exchanged across their concentration gradient between the peritoneal capillaries and the dialysis solution that is instilled into the peritoneal cavity.

Peritoneal Dialysis Catheters

- The most widely used is the POLYURETHANE TROCAR CATHETER which is available is many

Chronic dialysis catheter

Complications

- Bleeding after catheter insertion
- Perforation of gut.
- Abdominal pain
- Leakage around catheter
- Difficult Drainage
- Exit site infections.
- Peritonitis
- Metabolic problems (Hypo or hypernatremia, hypokalemia,hyperglycemia, hypopsosphatemia & metabolic alkalosis.

Chronic Peritoneal Dialysis

- Accepted mode of treatment for patients awaiting renal transplantation.

- Two types :

1) **CAPD** *(Continuous Ambulatory Peritoneal Dialysis)*

Contains of

- Plastic bag containing dialysis fluid
- Transfer set
- Permanent Peritoneal Catheter

- This procedure is particularly suitable for infants and for small children.

Complications:

- Peritonitis (most important complication of CAPD)
- Catheter malfunction
- Abdominal wall hernia
- Back pain
- Hydrothorax
- Respiratory difficulty

- **2) CCPD (*Continuous Cycling Peritoneal Dialysis*):**

Most common approach involves frequent continuous 'cycling' of dialysate during the night, while the child is asleep & then leaving in a small volume of dialysate during the daytime.

The automated device minimizes the need for extensive manual manipulation and hence reduces the risk of peritonitis.

The patient can carry out day to day activities and attend school.

Advantages

- Ability to perform dialysis at home.
- Technically easy than hemodialysis, especially in infants
- Ability to live a greater distance from medical center
- Freedom to attend school
- Less restrictive diet
- Less expensive than hemodialysis

Disadvantages

- Catheter malfunction
- Catheter related infections
- Impaired appetite
- Negative body image