End Stage Renal Disease & Renal Replacement Therapy

Definition

- End-Stage Renal Disease (ESRD) is a medical condition in which a person's kidneys cease functioning on a permanent basis leading to the need for a regular course of long-term dialysis or a kidney transplant to maintain life.
- Renal replacement therapy replaces nonendocrine kidney function in patients with renal failure. Techniques include intermittent hemodialysis, continuous hemofiltration and hemodialysis, and peritoneal dialysis.

Symptoms

- General ill feeling and fatigue
- Itching
- Weight loss without trying
- Headache
- Loss of appetite
- Nausea

Causes

- When the kidneys are no longer able to work at a level needed for day-to-day life.
- Most common causes are diabetes and high blood pressure.
- Comes after chronic kidney disease.
- The kidneys may slowly stop working during a period of 10 to 20 years before end-stage disease results.

Indications of Dialysis

- Acute kidney injury
- Uremic encephalopathy
- Pericarditis
- Life-threatening hyperkalemia
- Refractory acidosis
- Hypervolemia causing end-organ complications (e.g., pulmonary edema)
- Failure to thrive and malnutrition
- Peripheral neuropathy
- Intractable gastrointestinal symptoms
- Asymptomatic patients with a GFR of 5 to 9 mL/min/1.73 m²
- Any toxic ingestion
- The guidelines suggest that if patient is not having these problems, wait to have dialysis until eGFR is 6 mL/min.

Kidney Transplant

- A kidney transplant is surgery to place a healthy kidney into a person with kidney failure.
- Make sure patient is a good candidate for kidney transplant.

Special Diet

- Eating foods low in protein
- Getting enough calories if you are losing weight
- Limiting fluids
- Limiting salt, potassium, phosphorous, and other electrolytes

Types of Dialysis

- Hemodialysis: blood passes through a tube into an artificial kidney or filter.
- Peritoneal dialysis: a special solution passes into patient's belly though a catheter tube, the solution remains in patient's abdomen for period of time and then is removed.

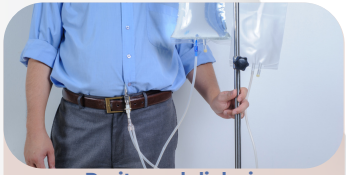
Treatment

Hemodialysis

- **Advantages:**
  1. Dialysis-free 4 days a week.
  2. Possible to be done at home
  3. Normal routine and travel with the machine
  4. Have to arrange access to dialysis facilities when traveling to another country
- **Disadvantages:**
  1. Diet and fluid restriction

Complications & Management

- **Low blood pressure:**
  1. Managing fluid gains
  2. Don't eat during dialysis
  3. Diabetes requires eating while dialyzing
- **Hypervolemia:**
  1. Reschedule any missed treatment
  2. Limit sodium intake
  3. Fluid guidelines
  4. Record weight
  5. Manage thirst
  6. Manage diabetes
- **Infection:**
  1. Keep access site clean and dry
  2. Check for any signs of an infection
  3. Hand hygiene and protecting access site
- **Itchy skin:**
  1. Avoid using skin care products that contain alcohol
  2. Limit shower time to 10 minutes and use warm water
  3. Be sure to take phosphate binders
  4. Stay for entire treatment time
  5. Reschedule any missed treatment



Peritoneal dialysis

- **Advantages:**
  1. Carried out at home.
  2. Fewer restrictions on diet and fluid intake.
- **Disadvantages:**
  1. Carried out every dat
  2. Upsetting feeling
  3. Developing peritonitis
  4. Peritoneum thickening and scarring
  5. Lack of energy and in some cases malnutrition
  6. Weight gain

Prepared by

Ahmed Halawa
Mostafa Yasser
Mohamed Yasser
Ziad El-Alfy
Nour Khaled
Mohamed Gad
Adham Yasser
Mahmoud Helmy
Waleed Mohamed
Mohamed Kamel
Haide Essam
Eman Magdy

Under Supervision of

Prof. Mohamed El-Hosseiny
Dr. Mona El-Tamalawy
Teaching Assistant. Shiamaa Khaled

Reference • PennMedicine