Chronic Kidney Disease Late Symptoms Assessment

Chronic kidney disease is the permanent loss of kidney function that occurs gradually over months or years. In patients with late or end stage chronic kidney disease, glomerular filtration rate drops below 10 milliliter per minute (mL/min). When kidney function continues to decline, waste products continue to accumulate in the body, causing complications such as uremia, metabolic acidosis, cardiac arrhythmias, anemia, pruritus, decreased urine output, edema, and central nervous system depression.



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Metabolic Acidosis
Metal-ball Acidic-lemon
Damaged kidneys are unable to produce adequate bicarbonate necessary to maintain acid-base balance in the body. The lack of bicarbonate (base) leads to metabolic acidosis. Patients with metabolic acidosis may attempt to compensate with Kussmaul breathing. This rapid, deep, and labored breathing pattern is an attempt to blow off excess carbon dioxide (acid) to return the patient to a state of acid-base balance.

Severe Uremia
Severed U-rainbow
Uremia is a clinical syndrome resulting from the accumulation of nitrogenous waste products due to severe renal dysfunction. It is commonly seen in end-stage renal disease when the glomerular filtration rate falls below 10 mL/min. Uremia leads to multisystem dysfunction, including metabolic acidosis, fluid overload, electrolyte imbalances, and systemic toxicity.

Arrhythmias
Broken Arrhythmia-drum
When renal filtration is compromised, excess potassium is not excreted, and levels can become dangerously elevated. When serum potassium levels are elevated, cardiac arrhythmias can occur.

Edema
Edamame
Both sodium retention and reduced excretion of fluid due to renal damage can cause fluid retention. Retention of fluid can lead to complications such as edema and worsening of hypertension. Patients should be monitored for signs of fluid overload.

CNS Depression
Deflated CNS-brain
CNS depression in chronic kidney disease refers to neurological impairment caused by electrolyte imbalances, metabolic acidosis, and the accumulation of nitrogenous waste products (uremia). This condition leads to progressive cognitive dysfunction, lethargy, dizziness, confusion, and, in severe cases, seizures or coma. Uremic encephalopathy is a life-threatening manifestation requiring urgent dialysis.

Anemia
Anemone
Damaged kidneys do not produce enough erythropoietin to stimulate adequate red blood cell production. As a result, patients with chronic kidney disease may become anemic. These patients also have a tendency to bleed due to impaired platelet aggregation.

Oliguria
Old-gopher
A decrease in glomerular filtration rate ultimately leads to a decrease in urine output. Oliguria occurs when a patient produces less than 400mL of urine per day. As the kidneys continue to fail, urine output may continue to decrease, until a patient becomes anuric, or produces less than 100mL of urine in 24 hours.

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Pruritus

Prairie-dog

The accumulation of waste products in the body, due to reduced renal filtration, can lead to intense itching. Calcium and phosphorus deposits in the skin are thought to be one of the primary causes of pruritus in patients with chronic renal disease. In rare cases, a condition called uremic frost can develop when blood urea nitrogen (BUN) levels are exceptionally elevated (over 200mg/dL). In this condition, urea forms crystals on the skin.

Considerations

End Stage Renal Disease (ESRD)

End of Stage Kidney Diseased

ESRD is the final stage of renal failure in which dialysis or a transplant is needed for the patient to survive; the kidneys can no longer function on their own.

GFR < 15mL/min

Gopher < F-15

Glomerular filtration rate (GFR) is a value that describes how efficiently the kidneys are working. In patients diagnosed with ESRD, GFR is less than 15 mL/min.

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