Acute Glomerulonephritis

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objectives

• Define glomerulonephritis
• Recognize signs and symptoms of glomerulonephritis
• Nursing management
Acute Glomerulonephritis

Immune-complex disease which causes inflammation of the glomeruli of the kidney as a result of an infection elsewhere in the body.
Definition

- Acute glomerulonephritis is the **inflammation of the glomeruli** which causes the kidneys to malfunction
  - It is also called Acute Nephritis, Glomerulonephritis and Post-Streptococcal Glomerulonephritis
  - Predominantly affects children from ages 2 to 12
  - Incubation period is 2 to 3 weeks
Injury usually occurs as a consequence of the activation and release of a variety of inflammatory mediators.

Haemodynamic, and toxic stresses can also induce glomerular injury.

A few glomerular diseases are due to hereditary defects resulting in deformity of the glomerular basement membrane.
Etiology/Pathophysiology

• Usual organism is Group A beta-hemolytic streptococcus

• Organism not found in kidney, but the antigen-antibody complexes become trapped in the membrane of the glomeruli causing inflammation, obstruction and edema in kidney

• The glomeruli become inflamed and scarred, and slowly lose their ability to remove wastes and excess water from the blood to make urine.
Acute post-infectious GN

• Typically occurs 7-14 days after group A β-hemolytic streptococcal throat or skin infection (nephritogenic strains), or infection by other organisms like staphylococci, salmonella, mycoplasma, and viruses.

• It can occur at any age but predominantly affects school-aged children.
Etiology

Infectious •
Streptococcal –
Nonstreptococcal postinfectious –
glomerulonephritis
Bacterial •
Viral •
Parasitic •

Noninfectious •
Multisystem systemic diseases –
Primary glomerular diseases –
Types of glomerulonephritis

- Acute glomerulonephritis - begins suddenly
- Chronic glomerulonephritis - develops gradually over several years.
Glomerulonephritis cause by?

Causes of glomerulonephritis include:

• Streptococcal infection of the throat (strep throat) or skin (impetigo)
• Hereditary diseases
• Immune diseases, such as lupus
• diabetes
• High blood pressure
• Vasculitis (inflammation of the blood vessels)
• Viruses (HIV, hepatitis B virus, and hepatitis C virus)
• Endocarditis (infection of the valves of the heart)
Impetigo
Streptococcal infection of the throat (strep throat) or skin (impetigo)
Sign and symptoms

• Cola-colored or diluted, iced-tea-colored urine from red blood cells in your urine (hematuria)
• Foamy urine due to excess protein (proteinuria)
Signs and Symptoms

- **Hematuria**: dark brown or smoky urine
- **Puffy face** with fluid retention, usually mild causing only a degree of edema
- **Oliguria**: urine output is < 400 ml/day
- **Edema**: starts in the eye lids and face then the lower and upper limbs then becomes generalized; may be migratory
- **Hypertension**: usually mild to moderate occasionally acute causing encephalopathy and seizures
General Symptoms

- Fever
- Headache
- Malaise
- Anorexia
- Nausea and vomiting
- High blood pressure
- Pallor due to edema and/or anemia
- Confusion
- Lethargy
- Loss of muscle tissue
- Enlargement of the liver
CLINICAL FEATURES

**Abrupt** onset of:
- glomerular haematuria (RBC casts or dysmorphic RBC).
- non-nephrotic range proteinuria (<2 g in 24 hrs).
- oedema (periorbital, sacral).
- hypertension.
- transient renal impairment (oliguria, uraemia).
INVESTIGATIONS

Base line measurements:

- ↑ Urea
- ↑ Creatinine
- Urinalysis (MSU):
  a) Urine microscopy (red cell cast)
  b) proteinuria
- ESR elevated
- ASO elevated
Treatment and nursing care:

• Bed rest may be recommended during the acute phase of the disease

A record of daily weight is the most useful means for assessing fluid balance
Management

- Treat s/s such as elevated BP
- Check GFR by 24h urine for creatinine clearance
- ANA
- Treat streptococcal infection with antibiotics, preferably PCN
- Corticosteroids
- Immunosuppressants
- Limit dietary protein, increase CHO
- Restrict sodium
- May progress to chronic glomerulonephritis, will treat as in CKD
Nursing care specific to the child with AGN

- Allow activities that do not expend energy
- Diet should not have any added salt
- Fluid restriction, if prescribed
- Monitor weights
- Education of the parents
Therapeutic management

Corticosteroids (prednisone) •
Dietary management •
Restriction of fluid intake •
Prevention of infections •
Monitoring for complications: infections, •
severe GI upset, ascites, or respiratory distress
Complications

- Hypertensive encephalopathy
- Heart failure
- Rapid decline in renal function
Nursing diagnosis for the child with glomerulonephritis

Fluid volume excess r/t to decreased plasma filtration

Activity intolerance r/t fatigue

Altered patterns of urinary elimination r/t fluid retention and impaired filtration

Altered family process r/t child with chronic disease, hospitalizations
Nursing diagnosis

Altered urinary elimination related to glomerular dysfunction
Fluid volume excess related to impaired renal function
IDNEY SAY !!!!

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