GLOMERULONEPHRITIS

Glomerulonephritis (GN) are diseases caused by inflammation and injury of the glomeruli or small blood vessels of the kidney, which can cause acute or chronic kidney disease. GN can result from primary or secondary causes.

CATEGORIZATION OF DIAGNOSES

	Low C3	Normal C3
Renal-limited	**Post-infectious GN** Immune complex-mediated GN C3 glomerulopathy	**IgA nephropathy** ANCA vasculitis (renal-limited) Anti-GBM (rare in children) Hereditary nephritis (collagen IV disorders)
Systemic	**Lupus nephritis** Shunt nephritis Subacute bacterial endocarditis	**IgA vasculitis (aka Henoch-Schönlein purpura)** ANCA vasculitis (systemic) Anti-GBM (rare in children) Alport syndrome

PRESENTATION

History
- Gross hematuria ("cola- or tea-coloured")
- Edema: often periorbital
- Decreased urine output

Physical exam
- Edema
- Hypertension

INVESTIGATIONS & DIAGNOSIS

All children with glomerulonephritis:
- ❑ Complete blood count and differential
- ❑ Creatinine, urea, albumin, blood gas
- ❑ Electrolytes, extended electrolytes
- ❑ Complement (C3 and C4)
- ❑ Urine dipstick (Hematuria +/- proteinuria) and microscopy (abnormal RBCs, RBC casts)
- ❑ Urine protein:creatinine ratio (on first morning spot or 24-hour urine)

As indicated, based on history and labs:
- ❑ Anti-streptolysin O titer and throat swab (for streptococcus infection)
- ❑ ANA and anti-dsDNA (for SLE), ANCA, anti-GBM antibodies
- ❑ Renal biopsy with light microscopy, electron microscopy and immunohistology (considered based on nephrology consultation)

MANAGEMENT

Management of glomerulonephritis depends on the underlying cause but should include:

Supportive:
- Treat fluid, electrolyte, and acid/base imbalances (avoid fluid overload)
- Maintain kidney perfusion
- Avoid nephrotoxic medications or procedures
- Renal replacement therapy (i.e dialysis) if severe AKI

Symptomatic:
- Hypertension and edema: Sodium and fluid restriction, diuretics, anti-hypertensive medications
- Proteinuria: Renin-angiotensin-aldosterone system inhibitors

Disease-specific:
- Immunosuppression
- Anti-microbials

LEGEND

CKD = Chronic kidney disease
ANCA = Anti-nuclear cytoplasmic antibodies
AKI = Acute kidney injury
SLE = Systemic lupus erythematosus
GBM = Glomerular basement membrane
ANA = Anti-nuclear antibodies

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