

#MADEEASY



**NEPHRITIC
SYNDROME**





NEPHRITIC SYNDROME

Long topic, that I tried making as short and concise as I could.

Patient: Namaste doc, today I'm here to discuss some disorders of the kidney. I want to learn about nephritic and nephrotic syndromes as the name sounds so familiar.

Doctor: Namaste, yes definitely. Let's start by talking about Nephritic syndrome first.

- ***Commonly known as Glomerulonephritis.***
- ***in simple terms, it is the inflammation of glomeruli, a part of nephron in the kidneys.***

Patient: doc what is the reason for this inflammation?

Doctor: the reason is quite simple and explained by the pathogenesis



Pathogenesis



Immune complex:

- **Antigen and antibody combine to form immune complex--> deposited in glomerular-->basement membrane --> glomerular damage --> impaired filtration and decreased GFR.**

Factors contributing to the Inflammatory response:

- **Complement system activated.**
- **Infiltration of leukocytes**
- **Proliferation of mesangial cells**

Endothelial cell injury leads to

- **An increase in permeability**
- **Disruption of glomerular capillary wall.**

- **Patient:** Oh now I get it, so how can one say that someone has this?
- **Doctor:** All these syndromes have a similar presentation.





Clinical Presentation

Haematuria

- **Can be microscopic or gross.**
- **Described as cola-coloured urine.**

Oliguria (due to decreased GFR)

Hypertension (due to activation of RAAS)

Proteinuria (less severe than in nephrotic syndrome)

Patient: Wait, doc you said “all these syndromes”, how many nephritic syndromes are there?

Doctor: The can be divided as primary nephritic disorders and some secondary causes leading to glomerulonephritis.





Primary Nephritic Disorders

Post-streptococcal glomerulonephritis (PSGN)

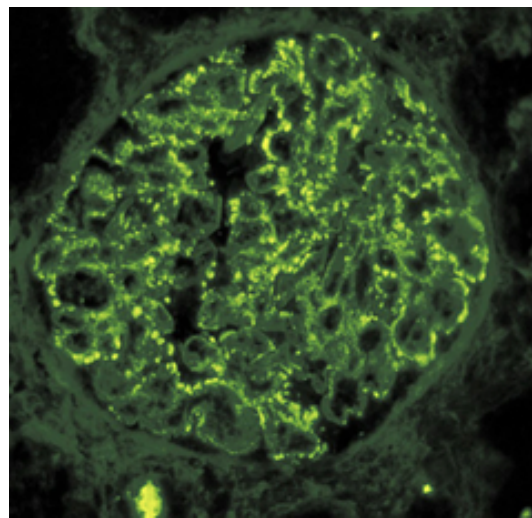
- **Common in children.**
- **Occurs after infection by Group A beta haemolytic streptococcus (GABHS) --> history of sore throat.**
- **Pathophysiology:**
 - **Diffuse involvement of glomeruli**
 - **Leukocyte infiltration**
 - **Immune complexes present: mostly as subendothelial deposits or “humps” below the epithelium and above basement membrane.**





Primary Nephritic Disorders

These deposits show a starry sky appearance under immunofluorescence.



Antibodies produced:

- Anti-DNAase antibody
- Anti Streptolysin O antibody

Patient: Yes, once I heard a neighbour's kids had urine like Coca-Cola. What about glomerulonephritis in adults?

Doctor: Coming to the next disorder,





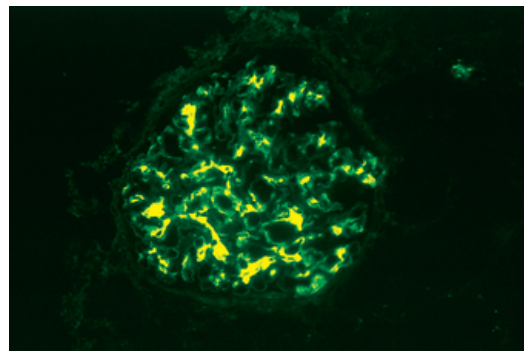
Berger's Disease

- **MCC of glomerulonephritis in adults.**

Pathogenesis

- **Mucosal infections like URTI (upper respiratory tract infection). UTI (urinary tract infection) or GI infection leads to increased IgA production.**
- **Within 72 hours of the onset of this infection, this IgA forms immune complexes.**
- **These immune complexes get deposited in the mesangium of the glomerulus.**

Mesangium shows diffuse granular deposits on immunofluorescence.





Rapidly progressive glomerulonephritis (RPGN)

- **Rapidly progressive glomerulonephritis (RPGN)**
- **Also known as crescentic glomerulonephritis.**
- **There is a rapid progression to renal failure.**

Pathogenesis:

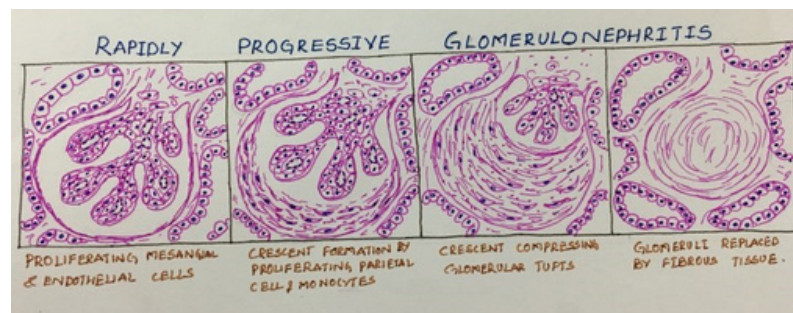
Severe glomerular inflammation: increased WBC infiltration and deposition of fibrin, parietal cells in the form of a crescent.

Subtypes based on Etiology

Type 1: Anti-glomerular basement membrane disease

Type 2: immune complex formation

Type 3: Pauci-immune RPGN





Rapidly progressive glomerulonephritis

Membranoproliferative glomerulonephritis (MPGN)

- Also known as mesangio-capillary glomerulopathy.
- Glomerular basement membrane and mesangium are affected.
- Mixed disorder with features of both Nephritic and Nephrotic syndromes.

Pathophysiology

- Activation of complement system due to immune complexes occurs.
- Immune complexes can be
- Intramembranous deposits (more characteristic): seen in Type 2
- Subendothelial deposits: seen in Type 1 (shows tram track appearance with splitting of basement membrane)

Doctor: then come the secondary causes.

- Secondary causes of glomerulonephritis
- Systemic lupus erythematosus (SLE)
- Vasculitis
- Goodpasture syndrome

Patient: that is too much information for me doc, I'll come next time to learn about the nephrotic syndrome.

Doctor: You're always welcome

