Post Streptococcal Glomerulonephritis

Acute poststreptococcal glomerulonephritis is a cause of nephritic syndrome often seen in patients who have recovered from a recent streptococcal infection either of the skin or the throat. The kidney damage is mediated by immune complexes which lodge in the glomerular subepithelial space and induce an immune response which results in significant damage. In poststreptococal glomerulonephritis, the glomeruli are typically enlarged and hypercellular, caused by infiltration by neutrophils and monocytes and proliferation of endothelial and mesangial cells. The proliferation and leukocyte infiltration is typically diffuse in nature, involving all lobules of all glomeruli. In immunofluorescence microscopy, granular deposits of IgG, IgM, and C3 in the mesangium and glomerular basement membrane is common. On electron microscopy, there are characteristic electron dense deposits on the epithelial side of the membrane, commonly described as having a lumpy bumpy appearance. The lumpy bumpy appearance is thought to be caused by antigen-antibody complexes at the epithelial surface. In the classic presentation, a young child suddenly develops fever, oliguria, and cola colored urine few weeks after recovery from sore throat and has red cell casts in urine, mild proteinuria, periorbital edema and mild or moderate hypertension. More than 95% of children recover with conservative therapy.



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Pathophysiology

Nephritic
Nerd-cricket
Nephritic syndrome is characterized by inflammation of the glomeruli and is a set of symptoms which include hematuria, hypertension, oliguria, and less than 3.5grams per day of proteinuria. Patients with nephritic syndrome also commonly present with red cell casts in the urine and azotemia. Nephritic syndrome can be caused by several diseases including Berger's disease, poststreptococcal glomerulonephritis and rapidly progressive glomerulonephritis.

Children
Child
Children are the typical population which are diagnosed with acute poststreptococcal glomerulonephritis, and additionally, they have the best prognosis. Getting the disease when older confers a worse prognosis.

Signs and Symptoms

Edema
Edamame
Edema of the extremities and face is caused by protein loss and can be the initial signs of the illness.

Cola Colored Urine
Cola Urinal
One of the first clinical symptoms seen in post streptococcal glomerulonephritis is cola-colored urine. This is also described as dark, or tea-colored urine, and arises from hemolysis of red blood cells that have penetrated the glomerular basement membrane and have passed into the tubular system

Follows Group A Streptococcal pharyngitis or Skin Infection
(A) Apple offered by Pharaoh in Skin-suit
Follows group A strep infection of skin or pharynx. This differs from rheumatic heart disease which only follows strep throat infection.

Diagnosis

Neutrophils
Nude-trojans
In poststreptococal glomerulonephritis, the glomeruli are typically enlarged and hypercellular, caused by infiltration by neutrophils and monocytes and proliferation of endothelial and mesangial cells.

Immunofluorescence (IF) Granular
Fluorescent grains
In immunofluorescence microscopy, granular deposits of IgG, IgM, and C3 in the mesangium and glomerular basement membrane is common.

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Lumpy Bumpy Appearance on Immunofluorescence (IF)

Lumpy Bumpy Components in Fluorescent Grains

On immunofluorescence, there are characteristic electron dense deposits on the epithelial side of the membrane, commonly described as having a lumpy bumpy appearance. The lumpy bumpy appearance is thought to be caused by antigen-antibody complexes at the epithelial surface.

Subepithelial Immune Complex Humps

Sub-E-pick

On electron microscopy, there are characteristic electron dense deposits on the epithelial side of the membrane, commonly described as having a lumpy bumpy appearance. The lumpy bumpy appearance is thought to be caused by antigen-antibody complexes at the epithelial surface.

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