

Poststreptococcal Acute Glomerulonephritis

PSAGN is the most common form of immune mediated inflammation of glomerules in childhood. It is caused by *Streptococcus pyogenes* infection.

Epidemiology and Etiology

Typical **age is 2-12 years**. Patients usually have streptococcal **pharyngitis or impetigo 5-21 days before** PSAGN manifestation. Incidence is 6-20:100 000 in western countries (usually sporadic occurrence), in developing countries even higher because of **lower hygienic standard** and **malnutrition** (epidemic occurrence). Other risk factors are:

- gender (more frequent in **boys**);
- even **genetic predisposition** for PSAGN.

Nephritogenic beta-hemolytic streptococcus, group A, type M 12 and 49 ist the most often originator.

Pathophysiology

There are some antigens produced by *Streptococcus pyogenes* the most important is NSAP-streptokinase (nephritogen strains associated protein), M-protein and endostreptosin. These antigens are bound by specific antibodies. So created immunocomplexes are taken up in capillaries of glomerules as deposits. It is mediated by activation of complement too. Finally, it leads to proliferative glomerulonephritis with decreased glomerular filtration, higher sodium resorption in tubules (→ edema), increased renin secretion (→ hypertension).

Diagnostic

Symptoms^[1]

- **edema** (75% of patients);
- **gross hematuria** (65%) - tea colored or cola colored urine;
- **hypertension** (50%);
- acute renal insufficiency with oliguria.

consequences of hypertension, oliguria and renal insufficiency can be"

- heart failure;
- encephalopathy.

Diagnostic Methods

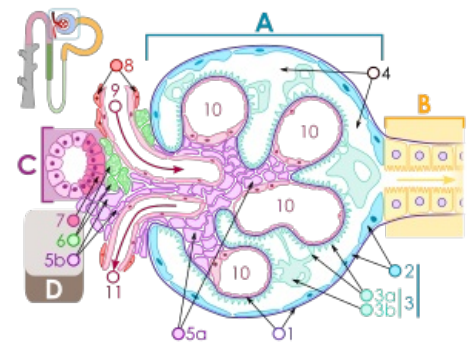
- **urine examination** →
 - hematuria,
 - mild to moderate proteinuria,
 - concentrated urine (there is oliguria!),
 - and the presence of casts,
 - urine culture is necessary too
- **blood examination** →
 - elevated creatinin (based on decreased glomerular filtration),
 - ASO antibodies,
 - reduced serum C3 level (if it has normal level, it should be different diagnosis),
 - elevated serum IgM and IgG
- **ultrasonography of kidneys**
- renal biopsy is not indicated! -diagnosis is based on previous streptococcal infection anamnesis and symptomatology (edema, hematuria, hypertension)

Therapy

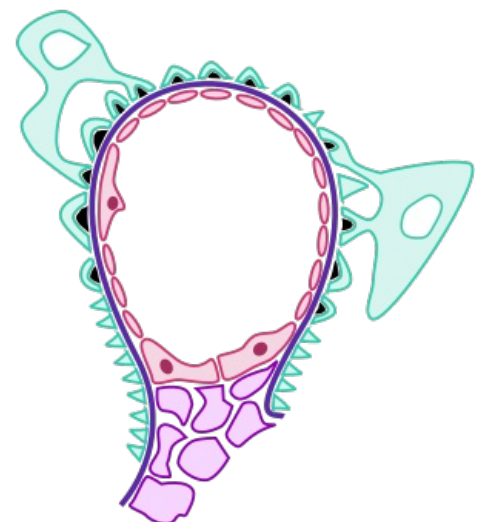
Therapy of PSAGN is based on:

- dietary sodium restriction
- diuretics
- antihypertensive agents.

Complete remission is in 95% of patients, only 5% of all patients can progress to end stage renal disease.



Scheme of normal renal corpuscle.



Scheme of glomerular capillary in PSAGN - immune complex deposits below the podocyte foot processes (black).

Links

Related articles

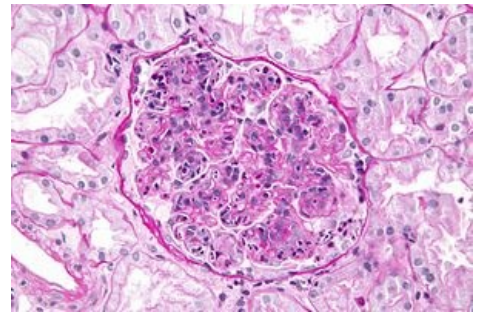
- Nephrotic Syndrome in Children
- Proteinuria in Children

References

1. KLIEGMAN, Robert M, et al. *Nelson Essentials of Pediatrics*. 5th edition. Philadelphia : Elseiver, 2006. pp. 758. ISBN 978-1-4160-0159-1.

Bibliography

- KLIEGMAN, Robert M, et al. *Nelson Essentials of Pediatrics*. 5th edition. Philadelphia : Elseiver, 2006. pp. 757-759. ISBN 978-1-4160-0159-1.
- WikiSkripta. *Akutní glomerulonefritida* [online]. ©2011. The last revision 2011-10-03, [cit. 2011-12-21]. <http://www.wikiskripta.eu/index.php/Akutn%C3%AD_glomerulonefritida>.



PSAGN - histopathology.