

# Nephrotic Syndrome in Children

In nephrotic syndrome is typically presented:

1. **nephrotic proteinuria**  $> 1 \text{ g/m}^2/\text{day}$ ,
2. **hypoproteinemia** - albumin usually  $< 25 \text{ g/l}$ , based on protein loss to urine,
3. **hypercholesterolemia** - based on increased lipoprotein synthesis (caused by hypoproteinemia),
4. **edema** - based on increased naturism resorption in tubules.


## Symptomes

Edemas have sudden beginning, localization: eyelids, ankles, scrotum or anasarca. Ascites might be presented too. It is connected with weight gain. In some cases edema can be presented by diarrhea (intestinal edema) or pulmonary edema or pulmonary effusion. Blood pressure should be normal (compare with PSAGN!). Generalized weakness.

## Diagnostic

- complete history and physical examination (previous pharyngitis → PSAGN, gastroenteritis → HUS, present edema, petechiae, hypertension ...)
- confirmation of presence proteinuria (is necessary repeat urinalysis)
- protein/creatinine ratio (from first morning urine sample), if P/C ratio is  $> 0,5$ , other evaluation is necessary:
  - serum electrolytes analysis, creatinine clearance, serum levels of cholesterol, total protein, albumin
  - streptozyme, C3, C4, ASLO analysis
  - renal ultrasonography

## Causes of Nephrotic Syndrome

1. **Minimal change nephrotic syndrome** (MCNS) is the most often cause of nephrotic syndrome in childhood (80% of nephrotic syndrome).  
 For more information see *Minimal Change Nephrotic Syndrome in Children*.
2. **Focal segmental glomerulosclerosis** is the 2<sup>nd</sup> most often cause of NS (10% of patients), its presentation is very similar to MCNS.
3. **Membranous nephropathy** is quite rare in childhood, it is cause of 1% NS, it is more in adolescents and children with systemic infections (hepatitis B, syphilis, malaria...)
4. **Congenital nephrotic syndrome**

## Links

### Related articles

- Proteinuria in Children

### Bibliography

- KLIEGMAN, Robert M, et al. *Nelson Essential of Pediatrics*. 5<sup>th</sup> edition. Philadelphia : Elsevier, 2006. ISBN 1-4160-0159-X.
- DOLEŽALOVÁ, Šárka. *Nefrologie I* [lecture for subject Peadiatrics, specialization Peadiatrics, 1 LF Charles University in Prague]. Prague. 2011-11-21. Avaliable from <http://kddl.lf1.cuni.cz/download/Nefrologie.I.pdf>.