



NEPHROTIC SYNDROME

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Definition

DEFINITION

- **Nephrotic syndrome** is a nonspecific disorder in which the kidneys are damaged, causing them to leak large amounts of protein from the blood into the urine
- Kidneys affected by nephrotic syndrome have small pores in the podocytes, large enough to permit proteinuria (and subsequently hypoalbuminemia, because some of the protein albumin has gone from the blood to the urine) but not large enough to allow cells through (hence no hematuria). By contrast, in nephritic syndrome, RBCs pass through the pores, causing hematuria.



Ø Problems & Hypotheses

<u>Lower limb swelling</u>	<u>Puffiness around the eye</u>	<u>Frothy urine :</u> (due to high protein in urine)
<ul style="list-style-type: none">•Hypoproteinemia•Massive proteinuria•Venous obstruction•Heart failure•Renal diseases: (nephritic/nephrotic)•Skin inflammation•Osteomyelitis	<ul style="list-style-type: none">•Inflammation•Eye Trauma•Allergic reaction•Lacrimal gland abnormality•Renal disease: (nephrotic/nephritic)•Hypoproteinemia	<ul style="list-style-type: none">•Diabetic nephropathy•Glomerulonephritis•Multiple myeloma•Cardiac disease•Polycystic kidney

Ø Questions to ask the patient

- I. Any history of allergies?
- II. Any history of chronic diseases
- III. Any history of infection?
- IV. Family history?
- V. Any history of trauma

Causes

Causes

Nephrotic syndrome has many causes and may either be the result of a disease limited to the kidney, called *primary* nephrotic syndrome, or a condition that affects the kidney and other parts of the body, called *secondary* nephrotic syndrome

1-Primary causes of nephrotic syndrome are usually described by the histology, i.e. minimal change disease (MCD) like minimal change nephropathy which is the most common cause of nephrotic syndrome in children, and Focal Segmental Glomerulosclerosis which is the most common cause of nephrotic syndrome in adults.



Causes

Causes

2- secondary causes of nephrotic syndrome :

Membranous nephropathy:

- Hepatitis B & Hepatitis C
- Protozoal infections, e.g. malaria
- Systemic lupus erythematosus(SLE)
- Diabetes mellitus
- Sarcoidosis

Focal segmental glomerulosclerosis

- Hypertensive nephrosclerosis
- HIV
- Obesity
- Kidney loss

Minimal change disease

- Drugs, especially NSAIDs in the elderly
- Malignancy
- Leukemia
- Allergy

Symptoms

1. proteinuria
2. hypoalbuminemia
3. hyperlipidemia
4. Edema (face / limbs)
5. Foamy appearance of the urine
6. High blood pressure



Tests and Diagnosis

- Urine tests.
- Blood tests.
- Removing a sample of kidney tissue for testing
- Electrolytes, urea and creatinine to evaluate renal function
- Auto-immune markers
- Ultrasound of the whole abdomen.



Treatment

Treatment

- Adjust diet to replace protein lost in the urine
- Use ACE inhibitors to reduce protein loss (in some cases)
- Treat edema by restricting salt intake and taking diuretics (water pills)
- Lower cholesterol and blood pressure with diet, exercise, and medications
- Immunosuppression for the glomerulonephritides
- Increase intake



COMPLICATIONS

COMPLICATIONS

- Venous thrombosis
- Infection
- Pulmonary edema
- Growth retardation
- Vitamin D deficiency
- Hypocalcemia
- Acute renal failure



Prevention

PREVENTION

- Keeping your blood pressure at less than 125/75 mm Hg with medicine, diet, and exercise. For more information, see the topic High Blood Pressure.
- Keeping strict control over your blood glucose level if you have diabetes. For more information, see the topic Type 1 Diabetes or Type 2 Diabetes.
- Maintaining healthy levels of fats (lipids), such as cholesterol and triglycerides. For more information, see the topic High Cholesterol.
- Not smoking or using other tobacco products. For more information, see the topic Quitting Smoking.

Risk Factors

- Drug abuse
- Hepatitis B
- Hepatitis C
- Medication side effect
- Any condition that causes a weakening of the immune system such as:
 - Diabetes
 - Organ transplant
 - Chemotherapy: the administration of medicines that kill cancer cells.
 - AIDS
- Acute glomerulonephritis
- Interstitial nephritis
- Cancer
- Reflux nephropathy

