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Case Report : Nephrotic Syndrome

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Abstract. *Nephrotic syndrome (NS) is characterized by persistent heavy proteinuria (mainly albuminuria) (>2 g/m2/24 hours); hypoproteinemia (serum albumin 250 mg/dL); and edema. Small amounts of protein are found in the urine of healthy children. Nephrotic syndrome is an important chronic disease in children. The estimated annual incidence of nephrotic syndrome in healthy children is two to seven new cases per 100,000 children under 18 years of age. A case has been reported of a boy aged 9 years 5 months who was brought by his parents to the emergency room at Tengku Rafi'an Siak District Hospital with complaints of swelling since 2 days ago before being admitted to the hospital. Complaints accompanied by puffy eyes when waking up, urinating a little, stomach and legs feeling like they are getting bigger. History of the same complaint (+), diagnosed with nephrotic syndrome in February 2024. Children with first clinical manifestations of SN should be hospitalized in order to accelerate examination and evaluation of dietary management, edema management, initiation of steroid treatment, and parental education.*

Keywords *Nephrotic syndrome, ASA, infection*

1. INTRODUCTION

Nephrotic syndrome is an important chronic disease in children. The estimated annual incidence of nephrotic syndrome in healthy children is two to seven new cases per 100,000 children under 18 years of age. It is more common in boys than in girls in the younger age groups, but after adolescence there is no significant difference between the sexes.

The underlying pathogenetic abnormality of nephrotic syndrome is proteinuria, resulting from increased permeability of the glomerular capillary wall. The mechanism of this increased permeability is unknown but may be related, at least in part, to the loss of negatively charged glycoproteins in the capillary wall. Children with clinical manifestations of NS for the first time should be hospitalized in order to expedite examination and evaluation of dietary management, edema management, initiation of steroid therapy, and parental education.

2. LITERATURE REVIEW

Nephrotic syndrome (NS) is characterized by persistent heavy proteinuria (especially albuminuria) (>2 g/m2/24 hours); hypoproteinemia (serum albumin <3.0 g/dL); hypercholesterolemia (>250 mg/dL); and edema. Small amounts of protein are found in the urine of healthy children (<4 mg/m2 per hour or U Pr/Cr <0.2). Nephrotic proteinuria in children is defined as protein >40 mg/m2 per hour or U Pr/Cr >2.0. (Marcdante KJ, Robert

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MK. 2019) Nephrotic syndrome (NS) is characterized by persistent heavy proteinuria (especially albuminuria) (>2 g/m2/24 hours); hypoproteinemia (serum albumin <3.0 g/dL); hypercholesterolemia (>250 mg/dL); and edema. Small amounts of protein are found in the urine of healthy children (<4 mg/m2 per hour or U Pr/Cr <0.2). Nephrotic proteinuria in children is defined as protein >40 mg/m2 per hour or U Pr/Cr >2.0. (Marcdante KJ, Robert MK. 2019)

Clinically, nephrotic syndrome is divided into 2 groups, namely: Primary nephrotic syndrome (idiopathic) & Secondary nephrotic syndrome. The pathogenetic disorder underlying nephrotic syndrome is proteinuria, resulting from increased permeability of the glomerular capillary wall. The mechanism of this increased permeability is unknown but may be related, at least in part, to the loss of negative glycoprotein charges in the capillary wall. Children with clinical manifestations of NS for the first time should be hospitalized in order to accelerate the examination and evaluation of dietary management, edema management, starting steroid treatment, and parent education.

3. CASE REPORT

Patient An. MA, male, aged 9 years 5 months was brought by his parents to the Emergency Room of Tengku Rafi'an Siak Hospital with complaints of swelling since 2 days ago before being admitted to the hospital. The patient came to the emergency room with complaints of a slightly enlarged stomach since 2 days ago SMRS. The patient also complained of swollen eyes after waking up. The patient complained of a cough, a dry cough without blood. And there was a runny nose since 3 days SMRS, fever (-), shortness of breath (-), nausea (-), vomiting (-). There were no complaints of defecation, for urination the patient complained of urinating a little. The frequency of urination is 3-4 times a day, approximately half a glass of water. Pain when urinating (-), blood (-). Then 1 day SMRS, the stomach was felt to be getting bigger and the legs were also getting bigger. The frequency of urination is 2-3x / day, approximately a quarter of a glass of water. History of the same complaint (+), diagnosed with nephrotic syndrome in February 2024. Physical examination of abdominal percussion shifting dullness (+), extremity pitting edema pretibial (+/+). In addition, the patient was given therapy with furosemide 2 x 25 mg, spironolactone 2 x25 mg, calnix pls syr 1 x 1 cth, methylprednisolone 16 mg 3x1, albumin 19 grams / kg / day then 26.8 gr / day.

4. RESULTS AND DISCUSSION

Patient An. MA, male, aged 9 years 5 months was brought by his parents to the Emergency Room of Tengku Rafi'an Siak Hospital with complaints of swelling since 2 days ago before being admitted to the hospital. The patient came to the emergency room with complaints of a slightly enlarged stomach since 2 days ago SMRS. The patient also complained of swollen eyes after waking up. The patient complained of a cough, a dry cough without blood. And there was a runny nose since 3 days SMRS, fever (-), shortness of breath (-), nausea (-), vomiting (-). There were no complaints of defecation, for urination the patient complained of urinating a little. The frequency of urination is 3-4 times a day, approximately half a glass of water. Pain when urinating (-), blood (-). Then 1 day SMRS, the stomach was felt to be getting bigger and the legs were also getting bigger. The frequency of urination is 2-3x / day, approximately a quarter of a glass of water. History of the same complaint (+), diagnosed with nephrotic syndrome in February 2024. Physical examination of abdominal percussion shifting dullness (+), pretibial pitting edema of the extremities (+/+).

Based on the anamnesis of complaints, the stomach and legs are getting bigger. Edema conditions can be obtained from metabolic processes, cardiovascular and renal dysfunction, and the liver. Heart and liver abnormalities can be helped to be ruled out through physical examination where the patient does not find any enlargement (widening), no liver enlargement (normal liver enlargement). Then also, from heart auscultation, no additional heart murmurs and sounds were found. If edema is caused by heart abnormalities, especially congestive heart failure, physical examination will find edema starting from the inferior extremities (pretibial edema) and accompanied by hepatomegaly, sometimes accompanied by ascites, and shortness of breath. In this case, it is believed that there is a kidney dysfunction, namely damage to the glomerulus in filtering passing proteins so that there is no protein uptake that causes edema. Anasarca edema in the case is proven by physical examination where shifting dullness (+) is obtained which indicates ascites and pretibial edema.

Complaints of decreasing urination can be interpreted as oliguria. Oliguria in patients may be caused by low fluid intake, then due to dehydration, and can also come from kidney disorders. Given that the patient was previously diagnosed with nephrotic syndrome, the possible cause of oliguria is a recurrent or relapsing nephrotic syndrome condition. Oliguria in nephrotic syndrome is a body compensation mechanism due to damage to the glomerular basement membrane. Protein leakage or massive proteinuria causes a decrease in oncotic pressure so that fluid will shift from the intravascular to the interstitial. As compensation, sodium and water retention will occur due to lack of fluid in the intravascular. We call this

condition the under-fill and over-fill theory, so that clinically oliguria will be found due to the body's efforts to maintain intravascular fluid volume, as well as anasarca edema conditions due to massive fluid shifts from the intravascular to the interstitial. Supporting examinations that can help in this case are serum albumin examination, urine protein, kidney function, and total cholesterol examination. In this case, the albumin result was 1.0 g/dL, the urine protein result was positive (+++). This condition is in accordance with the description above regarding the occurrence of protein leakage so that positive urine protein and hypoalbuminemia will be found. In addition, there is also damage to the capillary walls which causes hematuria.

Based on the results of anamnesis and physical examination and assisted by supporting examinations, a diagnosis of nephrotic syndrome can be established in the patient. Furthermore, because this condition has recurred in the patient, we need to determine the type of relapse in this case. The last relapse experienced by the patient occurred around February, so we can categorize that the patient is currently experiencing rare relapse nephrotic syndrome. Rare relapse nephrotic syndrome is characterized by proteinuria ≥ +2 and reappears less than 2 times a year after steroid treatment is stopped.

In addition, the patient was given furosemide therapy 2 x 25 mg, spironolactone 2 x25 mg, calnix pls syr 1 x 1 cth, methylprednisolone 16 mg 3x1, albumin 19 grams / kg / day then 26.8 gr / day. Furosemide is a diuretic drug used for kidney disorders and can be used to relieve symptoms such as shortness of breath and swelling in the arms, legs, and abdomen.

Spironolactone is a type of potassium-sparing diuretic. This drug works by inhibiting the absorption of salt (sodium) and excess water into the body and keeping blood potassium levels from getting too low. Then given methylprednisolone is a synthetic corticosteroid or glucocorticosteroid that functions to relieve inflammation in various conditions and to relieve severe allergic reactions. Given albumin to children can increase osmotic pressure and draw extracellular fluid back into the vascular compartment, thereby reducing edema.

5. CONCLUSION

Nephrotic syndrome (NS) is characterized by persistent heavy proteinuria (especially albuminuria) (>2 g/m2/24 hours); hypoproteinemia (serum albumin <3.0 g/dL); hypercholesterolemia (>250 mg/dL); and edema. And there are limitations in nephrotic syndrome. To establish a diagnosis of nephrotic syndrome is marked by clinical symptoms. As well as supporting examinations such as urinalysis, complete blood count, kidney ultrasonography, and chest radiography. For the management of children with nephrotic syndrome for the first time, it is better to be hospitalized with the aim of accelerating the

examination and evaluation of dietary management, edema management, starting steroid treatment, and parent education. Most children with nephrosis who respond to steroids will experience repeated relapses until the disease heals spontaneously towards the end of the second decade.

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