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A Rare Case Report of Nephrotic Syndrome Minimal Type with Wilson Disease

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Abstract
Nephrotic syndrome is a glomerular disease with proteinuria, oedema, hyperlipidemia, hypoalbuminemia. Wilson disease is autosomal recessive disease .can be associated with degenerative changes in brain, disorder of copper metabolism. We got a case of nephrotic syndrome with Wilson disease.
Keywords: *Nephrotic Syndrome, oedema, proteinuria, hyperlipidemia, Wilson disease.*

Introduction

Nephrotic syndrome is a glomerular disorder typically characterised by gross proteinuria, hypoalbuminemia, oedema, hyperlipidemia(1). Diagnosis is generally based on clinical features and investigations.

Wilson disease is an autosomal recessive disease due to altered copper metabolism(2). The symptoms are nonspecific and the disease may present as asymptomatic hepatomegaly with or without splenomegaly, sub-acute or chronic hepatitis, with or without Coomb's negative haemolytic anemia.(2)

Nephrotic syndrome is a complication of d-penicillamine therapy which is given for Wilson disease but in our case both disease co-exist without d-penicillamine therapy.

Case Study

A 8 year male child product of non-consanguineous marriage from lower socio-economic status presented with chief complaints of swelling of face followed by abdomen, legs for 20 days with intermittent low grade fever. Child was neurodevelopmentally normal and immunised as per NIS. History of contact with T.B. (father took ATT 1year back).

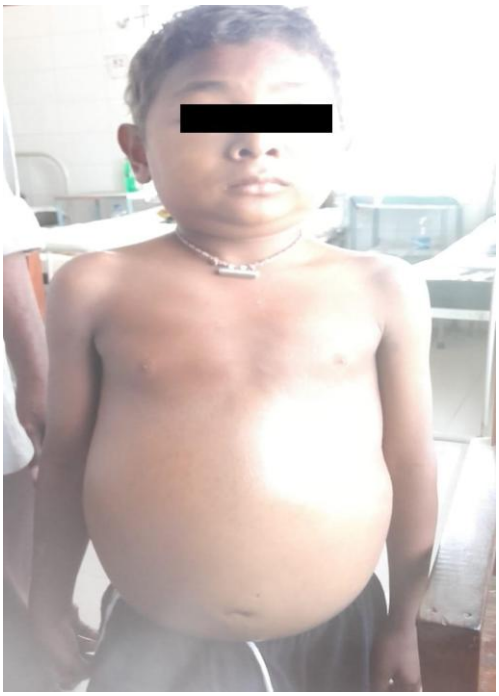
On examination child was conscious, oriented, afebrile. HR-90/min, RR-24/min, spo2-98% in RA, BP-100/64 mm Hg, anthropometric measurements weight-17 kg (<3rd percentile), height-120cm (between 10th -50th percentile), BMI-11.8 (<3rd percentile).

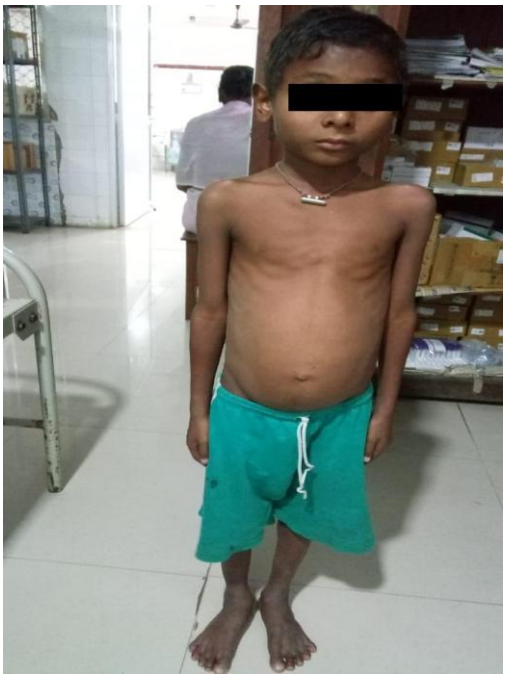
On head to toe examination some pallor, grade 2 clubbing, oedema (gross, generalised), lymphadenopathy (B/L axillary>2cms, B/L cervical > 1.5cm), B/L Bitot's spot were present.

On systemic examination distended abdomen, slit umbilicus, no venous engorgement, with fluid thrill positive, liver palpable upto 2cm with liver span 11 cm on mid-axillary line. Generalised oedema involving face, abdomen, scrotum and lower limbs. All other systemic examination were normal.

On Investigations WBC-9.4×10^3/µL,Hb-12.7 g/dL, RBC-5.36×10^6/µL, TPC-517×10^3/µL,

S.urea-18 mg/ dL, S.creatinine-0.6 mg/ dL, S.cholesterol-384 mg/dL, Urine routine and microscopy- protein ++++, SGOT-156 U/L, SGPT-66 U/L, S. ALP- 485 U/L, S.bilirubin (T-0.4 mg / dL, D-0.2 mg/dL), S.albumin-1.7 mg/dL, APTT-45.4 sec, INR-2.1,PT-21.7 sec, 24 hr urinary copper- 1730 µg/ day, ICTC- NR, Sputum for AFB & CBNAAT- negative. USG abdomen & pelvis shows gross ascites with normal viscera.





Discussion

Nephrotic syndrome is the clinical manifestation of glomerular disease associated with heavy proteinuria >3.5 gm/24hr or a urine protein ratio >2[(3)]. Most children with nephrotic syndrome have primary or idiopathic nephrotic syndrome[(3)].

In idiopathic , hereditary and secondary nephrotic syndrome there are immune and non immune insult to the podocytes that leads to foot process effacement of the podocytes, decreased umber of functional podocyte and altered slit diaphragm integrity[(3)]. Most children presented with oedema, hyperlipidemia, hypoproteinemia with associated hypercoagulable state[(3)]. Diagnosis of nephrotic syndrome is confirmed by urinalysis with urine protein : creatinine ratio, serum cholesterol[(3)]. Secondary case of nephrotic syndrome should be rule out by such as SLE, HIV, HBV, HCV.[(4)]

Children with onset of uncomplicated nephrotic syndrome between 1-8 years of age are likely to have steroid responsive MCNS[(4)]. Tuberculosis must be ruled out prior to starting immunosuppressive therapy[(3)]. Children with gross hematuria, hypertension, hypocomplimentemia or age <1 yr or >12 yr should be considered for renal biopsy[(3)]. Other drugs which can also be used in nephrotic syndrome are Levamisole, tacrolimus, cyclosporine, cyclophosphamide, rituximab[(4)]. All children with nephrotic syndrome should receive immunisation against pneumococcus, influenza.

Wilson disease is an autosomal recessive disorder that can be associated with degenerative changes in the brain, liver, K-F ring in cornea[(3)] Wilson disease is AR disease resulting in copper overload[(4)]. Children present with asympotamatic hepatomegaly with or without splenomegaly, subacute or chronic hepatitis and acute hepatic failure with or without coombs negative haemolytic anemia[(3)]. The neurological features of WD are primarily due to deposition of copper in the lenticular nuclei, brainstem, cerebellum[(9-5)]. Neurological features are rigidity, dystonia, tremor, insomnia[(1-8, 6-5)]. Most patient with WD have decreased ceruloplasmn level <20

mg/dL[3].Urinary Copper challenge test shows excretion of copper > 1600 mg/ 24 hr[3]. Slit lamp lamp examination shows KF ring which resolved after adequate treatment[3]. The long term treatment of symptomatic cases of WD entails the chronic use of copper chelators and zinc[1-6]. The copper chelators commonly used for WD are d-Penicillamine and trientine.[3]

Our patient had nephrotic syndrome range of proteinuria, oedema, hyperlipidemia which informed the initial diagnosis of nephrotic syndrome, but after 2days we found clubbing which was previously missed during examination. so we did slit lamp examination of eye and got B/L bitot's spot and K-F ring. On the next day we did d-penicillamine urinary copper challenge test and the test came positive. He had clubbing, bitot's spot, some pallor with deranged LFT and positive 24 hr urinary copper challenge test. So Wilson disease also associated with underlying nephrotic syndrome.

Generally nephrotic syndrome occurs due to complication of d-penicillamine use but in our case child had both nephrotic syndrome with underlying Wilson disease without d-penicillamine therapy[9]. We gave Trientine dihydrochloride and zinc for the treatment of Wilson disease. Our case is a unique case where both nephrotic syndrome and underlying Wilson disease co-exist without d-penicillamine therapy.

Conclusion

Mostly nephrotic syndrome was the late complication of d-penicillamine therapy in Wilson disease. But in our case both nephrotic syndrome and Wilson disease co-exist without d-penicillamine therapy. There is no clear relationship between nephrotic syndrome and Wilson disease.

Many paediatricians see few cases of Wilson disease in their day to day practice. However theoretically chronic penicillamine therapy can lead to nephrotic syndrome but on reality it is a rare entity. In all cases of nephrotic syndrome where clubbing is present one has to rule out chronic liver disease. In 5-15 year age group one can think of possibility of Wilson disease. In such scenario once nephrotic syndrome is diagnosed over the background disease of Wilson it is better to avoid penicillamine. That's the reason by putting on trientine and daily zinc we may avoid further renal damage related to penicillamine. Final message is nephrotic syndrome and Wilson disease are related on the basis of penicillamine but if we get both without penicillamine therapy one has to protect renal parenchyma by use of trientine. Because of rarity of this case we thought to report this case.

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