

Renal Function Tests in Pediatric Patients with Minimal Change Steroid-Responsive Nephrotic Syndrome

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ABSTRACT

Objectives: To determine renal function tests in children with minimal change disease (MCD).

Study Design: Prospective Setting: MCD patients from pediatric ward, P.V.P. General Hospital, Sangli as well as General Hospital, Miraj.

Participants: The study group comprised of 30 children with minimal change disease (mean age = 4.73 ± 2.04 years) and control group of 30 children matching in age and sex.

Methods: Venous blood samples were collected in test tube with aseptic precautions. The sera with no sign of hemolysis used for the analysis of urea, creatinine, uric acid and electrolytes. After collection of blood sample early morning urine sample were collected on the next day. The fresh urine sample was collected and part of which diluted for urea and creatinine estimation. Remaining urine was used for estimation of urea, creatinine, total protein and Microalbumin.

Results: A significant alteration of Serum urea, creatinine, uric acid, potassium levels in children with minimal change disease and excretion of urea, creatinine were significantly decreased whereas, total protein, and microalbumin excretion were increased.

Conclusion: These findings suggest that increased levels of these parameters may be an indicator of renal tubular damage and dysfunction.

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Minimal change disease (MCD) is a disease of the kidney which causes nephrotic syndrome and usually affects children (peak incidence at 2-3 years of age). MCD is most common in very young children, but can occur in older children. It is by far the most common cause of nephrotic syndrome (NS) in children under 10 years of age, accounting for the majority (about 90%) of these diagnoses. Among teenagers who develop NS, it is caused by minimal change disease about half the time. It may also occur in adults, but accounts for less than 20% of adults diagnosed with NS. Among children less than 10 years of age, boys seem to be more likely to develop minimal change disease than girls 14.

Although the glomeruli are relatively normal on light microscopy in minimal change disease at the time of presentation, many children have a modest reduction (averaging 30 per cent) in glomerular filtration rate (GFR), as evidenced by a small elevation in the plasma creatinine concentration 4,7,19,20. This relatively common change may be mediated at least in part by the foot process fusion that is characteristic of the disease 4,19. Filtrate that has passed through the glomerular basement membrane is thought to enter the urinary space

via the slit pores between the adjacent foot processes. Foot process fusion decreases the filtration slit frequency, thereby increasing the average path length for filtration 7.

Renal function assessment is important for clinical management of patients and for intervention studies. With a view of better management in MCD, it was planned to determine renal function tests and serum electrolyte in children with MCD.

MATERIALS AND METHODS

30 children (mean age = 4.73 ± 2.04 years) with MCD (twenty boys, ten girls) were admitted in pediatric ward, P.V. P.General Hospital, Sangli or General Hospital, Miraj and composed the study group. All patients were given response with steroid prednisone The control group consisted of 30 children matching in age and sex without a history of acute illness or renal disease.

Patients with cardiac disease, hepatic disease, diabetes mellitus, septicemia, and human immunodeficiency virus (HIV) infection were excluded from the study. The patients of study group received regular salt restricted diet and diuretics. The details such as history,