URINARY TRACT OBSTRUCTION

Renal function reserve predicts long-term renal deterioration in children with posterior urethral valve

Posterior urethral valve (PUV) is the most common cause of bladder outlet obstruction in boys. It can lead to chronic kidney disease and renal failure in severe cases. Identifying those children who are at an increased risk of future renal damage after valve fulguration would be of great benefit. Serum creatinine level, and glomerular filtration rate (GFR) calculated using creatinine clearance rate, are currently used for this purpose; however, these factors seem to lack the sensitivity to accurately predict renal damage. Ansari and colleagues assessed the utility of renal function reserve (RFR)—calculated as the difference between baseline GFR and GFR following protein-load stimulation—as an early indicator of long-term outcome in boys with PUV.

RFR was calculated for 25 children at least 6 weeks after fulguration. GFR was measured by the plasma clearance rate of ^{99}Tc -labelled DTPA (diethylene triamine penta-acetic acid) at baseline and after

stimulation with a 10% mixed amino acid solution. The children were categorized according to the presence (group 1; $n = 16$) or absence (group 2; $n = 9$) of RFR: a $\geq 10\%$ increase in GFR after stimulation compared to baseline was defined as the presence of RFR, whereas absence of RFR was defined as a decrease or a $< 10\%$ increase. Notably, nadir serum creatinine levels did not differ between these groups.

On univariate analysis, the presence of urodynamic abnormalities (poor bladder compliance, detrusor overactivity and myogenic failure) and median serum creatinine level at presentation were predictive of RFR presence after treatment. After a median follow-up period of 13 months, serum creatinine levels were significantly higher in children without RFR compared to those with RFR (median 1.3 mg/dl versus 0.78 mg/dl, $P < 0.05$).

The authors conclude that their data illustrate the lack of sensitivity of serum creatinine as a marker of renal function

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loss in children with PUV. RFR seems to be absent in about one-third of children presenting with this disorder, and might represent a useful prognostic indicator of long-term renal damage.

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