

SYMMETRY OF DIFFERENTIAL RENAL FUNCTION – DOES IT INFLUENCE LONGER TERM RENAL DISEASE IN PATIENTS WITH POSTERIOR URETHRAL VALVES?

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Introduction: Posterior urethral valves (PUV) is the most common congenital obstructive uropathy and one of the major causes of chronic kidney disease (CKD). Many predictors of outcome and long term renal function have been suggested, including the protective benefit of a unilateral non-functioning kidney known as the 'pop off' mechanism. Our aim is to investigate whether asymmetric renal function in PUV predicts risk of developing chronic kidney disease.

Methods: Retrospective review of patients affected by PUV born between 2005 - 2011. Patients were identified from an institutional database. Data were collected including split function from first nuclear medicine renography (MAG3 or DMSA) scan and were compared to most recent eGFR - calculated using the Schwartz Haycock equation. Asymmetric function was defined as one kidney <15%. Cases without renography results were excluded. Results were analysed using SPSS statistics package.

Results: 94 boys were identified and 65 were included for analysis following exclusions. Nuclear medicine imaging was performed at a median age of 7 months and was DMSA in 61% and MAG3 in 39% of cases. Median follow up was 7 years (range 1 - 11.5 yrs). Chronic renal disease distribution is shown in table 1. 5 patients have had renal transplants.

18 patients had asymmetrical function with a median GFR of 68 (± 28) ml/min/1.73m² compared to median of 84 (± 29) ml/min/1.73m² for patients with symmetric function.

Median GFR was significantly lower in patients with asymmetric differential function compared to those with symmetrical function (p=0.03).

Conclusion: Contrary to the reported protective theory of the 'pop –off' mechanism for renal function, our data suggest asymmetry of early differential function may negatively influence longer term degree of renal impairment in patients with PUV.

% of Cases with Asymmetrical Function by CKD group		
Stage	Number of cases n = 65	% Asymmetric Function n = 18
CKD1	24	17% (4/24)
CKD2	26	31% (8/26)
CKD3	9	33% (3/9)
CKD4	1	100% (1/1)
CKD5	5	40% (2/5)

Table 1.