Original article

A STUDY ON LONGTERM OUTCOMES OF POSTERIOR URETHRAL VALVES

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Posterior urethral valves (PUV)

ABSTRACT:

Introduction: Posterior urethral valves (PUV) constitute a rather rare congenital disorder with membranous obstruction of the male posterior urethra. This form of infravesical obstruction is potentially seriously detrimental to the more proximal urinary system already prenatally. The aim of study is to study patients with posterior urethral valve and their Biochemical parameters, imaging studies and urodynamic measurements for diagnosis and identifying complications of the disease. **Materials and Methods:** This study includes a retrospective study of 35 consecutive patients who were admitted in Pediatric Surgery Department of our institute from January 2015 to January 2017.

All the patients were admitted and underwent biochemical and radiological investigations. Depending in the results the definitive treatment was planned. All the patients after discharge were kept on regular follow-up. Most of our pateints presented at 1 year or less of age. **RESULT**: Vesicoureteric reflux was seen in 23 patients(65.71%), comprising of 32 units. (9 patients had bilateral reflux, left sided reflux was present in 8 patients and right sided reflux was present in 6 patients) 12 patients did not have reflux. The urine examination showed infection in 33 patients(94.28%) and presence of albumin in 10(28.57%). S. Creatinine and blood urea were raised in 25(71.42%) case presentation. Out of the 35 patients, 34 patients underwent cystourethroscopy. In all patients cystourethroscopy showed presence of classical Type -I PUV. There was no case of Type III PUV in our study. **Conclusion:** With availability of renal scan and urodyanamic study, more and more patients of bladder dysfunction and secondary upper tract changes are likely to be diagnosed and evaluated. Increasing awareness and facility for antenatal

diagnosis in early gestational age, allows us to terminate pregnancy for the fetus with adverse sonographic findings secondary to posterior urethral valves.

Keywords:Posterior urethral valve,PUV,lower urinary tract

INTRODUCTION:

Urethral valves manifest in various age groups-from neonatal age to early adolescence with varying presentations. The renal parenchymal changes may persist despite successful treatment of the primary obstructing posterior urethral valves leading to renal insufficiency. Incidence of renal failure in literature is reported at 25-35%.

Posterior urethral valves occur in 1:5000live births and in approximately every 1/1250 fetal ultrasound screening [1]. Despite the high prevalence, the most common treatment for valves identified in utero is fetal termination. Routine prenatal ultrasound is currently not recommended until 20 weeks of gestation. New understanding of the pathogenesis of renal dysplasia and long-term renal dysfunction demonstrate that changes in renal development and architecture may begin to occur as early as 14 weeks of gestation [2]. Improved mortality and long-term morbidity from posterior urethral valves and congenital bladder outlet obstruction will likely remain unchanged until it is possible to intervene prior to the onset of irreversible renal damage.

Posterior urethral valves (PUV) constitute a rather rare congenital disorder with membranous obstruction of the male posterior urethra. This form of infravesical obstruction is potentially seriously detrimental to the more proximal urinary system already prenatally. Consequences to bladder and kidneys may be irreversible, leading to chronic renal failure, end-stage renal disease and finally to death. Given its rarity, most medical professionals do not encounter many PUV patients, and few units have more than a limited experience in treating them. Nevertheless, in recent years mortality in PUV has been reported to have declined due to earlier diagnosis and referral to paediatric urological centers, improved instrumentation, achievements in pre- and postoperative management and greater experience in care of these severely ill patients (Cuckow 2006). As a consequence, there are now many patients requiring renal replacement therapy at a much earlier age (Dinneen and Duffy 1996, Cuckow 2006). Again paediatric surgeons and urologists treating these patients as a child rarely meet them in adulthood. Long-term outcomes of PUV are not properly known. In Finland, late outcomes of PUV patients have not been investigated. Systematic follow-up studies elsewhere are also lacking

Controversy persists regarding catheter drainage or non-catheter drainage as a preliminary management. Endoscopic fulguration remains the gold standard of treatment, once the patient is stabilized of altered internal milieu, with a necessary long term follow up [3].

Methodology:

This study includes a retrospective study of 35 consecutive patients who were admitted in Pediatric Surgery Department of our institute from January 2015 to January 2017.

All the patients were admitted and underwent biochemical and radiological investigations. Depending in the results the definitive treatment was planned. All the patients after discharge were kept on regular follow-up. Most of our pateints presented at 1 year or less of age.(table 1)

TABLE 1

Age Group	Number of Cases
< 1 Month	10
1-12 Months	11
1-5 years	9
> 5 years	5
Total	35

The urine examination showed infection in 33 patients and presence of albumin in 10. S. Creatinine and blood urea were raised in 25 case presentation, while the Urine specific gravity more than 1020 indicating adequate concentrating capacity of kidney was found in 5 patients only. All the neonates (10/10) and 63.6% of patients of 1-12 months had raised S.Creatinine.

(Table 2)

TABLE 2

Urine Examination	Albumin ++ Infection : Microscopy	10 33 23
Raised RFT		25
Urinary Specific Gravity > 1020		5/22
Decreased CCr		13
Serum Potassium > 6		11

Vesicoureteric reflux was seen in 23 patients, comprising of 32 units. (9 patients had bilateral reflux, left sided reflux was present in 8 patients and right sided reflux was present in 6 patients) 12 patients did not have reflux. (Table 3)

TABLE 3

	Grade I	Grade II	Grade III	Grade IV	Grade V	No. of Cases
Left			3	5	1	8
Right	-	-	2	2	2	6
Bilateral			2	1	6	9
Total	-	-	7	8	9	23

Out of the 35 patients, 34 patients underwent cystourethroscopy, while one child who was in moribund condition did not improve after initial resuscitation anddied before definitive management.

In all patients cystourethroscopy showed presence of classical Type -I PUV. There was no case of Type III PUV in our study.

TABLE 4

Cystourethroscopy			34
	Posterior Urethral valve (Type I) Bladder	34	
	* Trabeculations	34	
	*Trabeculations with diverticulum	1	
	* Trabeculations with Cystitis	20	
	Ureteric orifice		
	Normal	14	
	Rounded	10	
	Golf Hole	10	
Fulguration of Valve	Bugbee electrode	34	34
	Resectoscope	00	

DISCUSSION:

Posterior urethral valves cause a broad array of renal parenchymal and vesical dysfunction. Because urethral valves are present during the earliest phase of fetal development, primitive tissues mature in an abnormal environment of high intraluminal pressure resulting in permanent maldevelopment(hydronephrotic, cystic or dysgenetic kidneys) and longlasting functional abnormalities, with gradual progress towards renal insufficiency. Incidence of renal failure in literature is reported at 25-35% [4].

The mortality in the present series was 11.4% (4 out of 35 patients). The patients had altered renal function and bilateral gross VUR and associated renal dysplasia.

Vesico-ureteric reflux was present in 66% (23 out of 35 patients). In the survivors, it subsided in 46% (16 out of 35 patients), while 17% required nephrectomy. Another 17% (6 out of 35 patients) required reimplantation and 17%(6 out of 35 patients) showing persistent reflux are awaiting final decision. Persistent hydronephrosis was present in 15% (5 out of 35 patients) of patients and vesical dysfunction in 20% (7 out of 35 patients). Bladder neck obstruction and urinary incontinence wasnot encountered in any of the patients. Long term follow up showed adequate renal function and satisfactory growth in 70% (25 out of 35 patients) of survivors while the remaining 30% of patients are progressing towards end stage renal disease.

CONCLUSION:

With availability of renal scan and urodyanamic study, more and more patients of bladder dysfunction and secondary upper tract changes are likely to be diagnosed and evaluated [5] [6]. Increasing awareness and facility for antenatal diagnosis in early gestational age, allows us to terminate pregnancy for the fetus with adverse sonographic findings secondary to posterior urethral valves. Vesicoamniotic shunt or fetal surgery is not feasible in our set up.Neonatal and pediatric dialysis and renal transplantation facilities are needed to reduce the mortality due to posterior urethral valves [7] [8]

References:

1. Churchill BM, Krueger RP. Fleicher MH. Hardy BE. Complications of posterior urethral valve surgery and their prevention. Urol, Clin North Am 1983:10: 519523.
2. Cyssen LJ. Cystic kidneys in children with congenital urethral obstruction. J Urol 1971: 106: 939942.
3. S. A. Zderic and D. A. Canning, “Posterior urethral valves,” in The Kelalis-King-Belman Textbook of Clinical Pediatric Urology, S. G. Docimo, D. A. Canning, and A. E. A. Khoury, Eds., vol. 1, chapter 63, pp. 1059–1081, Thompson Publishing Services, 5th edition, 2007.
4. Hendren WH; Posterior Urethral Valves in Boys: A Broad Clinical Spectrum J. Urol. 1971; 106; 298.
5. Stephens FD: Congenital Malformations of the urinary tract. New York, PraegerPublishers, 1983, PP.96,103.
6. Campbell-Walsh_Urology,10th_Edition_2012,sectionXVII-Pediatric Urology,chapter 126, page number 3389-3411.

7. Warshaw BL, Hymes LC. Trulock TS, Woodard JR. Prognostic features in infants with obstructive uropathy due to posterior urethral valves. J Urol 1985: 133: 240243.
8. Johnston JH: Vesico ureteric reflux with urethral valves; Br. J. Urol. 1979; 51; 100.