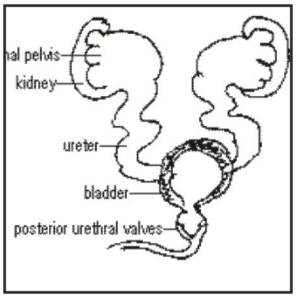
ORIGINAL PROF-880

POSTERIOR URETHRAL VALVES



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ABSTRACT... akrammlk@yahoo.com. Posterior urethral valves are the most common cause of mechanical infra vesical obstruction in children. The disorder has a broad spectrum of severity and the patients could develop complications on the long term, even after valves ablation. **Objective:** To record the various clinical presentations of PUV and audit our experience in management of PUV and its various complications. **Study design:** Prospective study **Setting:** Department of Urology Allied Hospital Faisalabad. **Period:** From 01-01-2001 to 31-07-2004. **Material & Methods:** All male patients (children, infants & neonates) presented with various symptoms and signs of PUV were included in the study. Detailed history & clinical examination was performed in each case. Diagnosis was confirmed by micturating Cystourethrogram. Posterior urethral valves were ablated in all patients by electric hook. The period of follow-up was 06 months. **Results:** Total number of patients were 32. Age of presentation was 40 days to 27 years. Majority 14(44%) of patients presented with urinary retention.13 (41%). Patients presented with dribbling of urine and poor stream. 07(22%) had associated vesicouretral reflux. Vesicostomy was performed in one patient and one patient had to be dialyzed. Complications occurred in 13 (14%) patients. Most common were urinary tract infections in 10 (31%) patients. One patient went into End stage renal disease. **Conclusions:** Valve ablation is the mainstay of treatment of post urethral valves. Prenatal and postnatal factors like renal dysplasia and UTI have their role in final outcome. Drainage by feeding tube and Vesicostomy improves the outcome.

Key Words: Posterior urethral valves, vesicostomy, Vesicoureteric reflux.

INTRODUCTION

Congenital membranes obstructing the urethra are called posterior urethral valves (PUV)[1,2,3] It is the most common cause of lower urinary tract obstruction in male neonates; reported incidence is 1 per 8,000 to 1 per 25,000 live births[4].

Approximately 10-15% of children undergoing renal transplant have PUV as the cause of renal insufficiency, and approximately one third of patients born with PUV

progress to ESRD[5,6,7].

Three types have been classified[8];

Type 1. Valves representing folds extending inferiorly from the veru to the membranous urethra.

Type 2. Valves as leaflets radiating from the veru proximally to the bladder neck.

Type 3. Valves as concentric diaphragms within the prostatic urethra, either above or below the veru.

By far the most common are Type 1 valves, and these are believed to result from failure of the posterolateral migration of the urethrovaginal folds with fusion of the distal extension of these folds[8].

PUV occurs exclusively in males. These may present with a broad array of symptoms or signs at any age during childhood and may vary from ascites in the neonate to renal failure in infant or only minor voiding dysfunction in an older child. Urinary tact infection is common at all ages[9,10,11,12,13,14,15,16].

Diminished urinary output in utero usually results in oligohydramnios. This can also lead to pulmonary hypoplasia and respiratory distress syndrome. Generally poor outcome is seen when a mother shows oligohydramnios and a fetus shows hydro-nephrosis[11,16,17,18].

Associated with this dysfunction may be renal dysplasia, which may compromise renal function despite relief of obstruction. Depending on the degree of obstruction, azotemia, acidosis, hyponatremia, hypertension and at times hyperkalemia may be seen[19,20].

Older infants and children usually have less renal function impairment and may present with inability, to void, urinary tract infection or various voiding problems such as urgency, frequency, incontinence or diurnal enuresis[21,22].

Diagnosis usually is made before or at birth when a boy is evaluated for antenatal hydronephrosis. Before the era of prenatal sonography, PUV was discovered during evaluation of urinary tract infection (UTI), voiding dysfunction, or renal failure.

Thomas reported that 10% of patients with prenatal hydronephrosis detected by ultrasound had PUV[23]. The sensitivity of antenatal ultrasound is only 45% in detecting PUV in patients younger than 6 months[24].

Neonates may present with severe pulmonary distress due to underdevelopment of the lung caused by oligohydramnios. Physical findings can include, poor fetal breathing movements, Small chest cavity, abdominal mass (ascites), potter facies, limb deformities[25,26,27].

In older children, physical findings can include poor growth, hypertension, and lethargy. An intermittent or weak urinary stream is a non-reliable sign[19]. The diagnosis is made radiologically with a voiding cystourethrogram[13,2829,30]. This is usually done in conjunction with the renal ultrasound to evaluate the upper tracts.

The diagnosis of PUV is indicated by visualization of the valve leaflets. Other clues to the diagnosis are a thickened trabeculated bladder, a dilated or elongated posterior urethra, and a hypertrophied bladder neck. Diverticuli, cellules, vesicoureteric reflux, and reflux into the ejaculatory ducts secondary to elevated bladder and urethral pressures also may be present[13,29,30].

Most neonates and young infants present with significant reduction in renal function. In order to assess the potential for renal recovery, catheter drainage with a small feeding tube is usually done for 3-7 days during correction of acidosis and rehydration. If renal function improves satisfactorily, a vesicostomy or, if the urethra is large enough, a trans urethral procedure may be accomplished[11,16,31,32].

Adequate care needs a team of pediatric urologist, pediatric neonatologist and pediatric nephrologist. Short-

term goals involve treating pulmonary distress, immediate relief of urethral obstruction (placement of 5F feeding tube), fluid and electrolytes balance[16,32].

Surgical care of the patient with PUV varies according to age, bladder status, and renal status. Ideal treatment involves transurethral incision of the PUV during the first few days of life. The valves can be incised at the 12-, 5-, and 7-o=clock positions with either a cold knife or electrocautery. Some surgeons prefer to leave a catheter in place for 2-3 days after the procedure. The timing of the postoperative MCUG varies and ranges from several days to several, months[14,30,33,34,35].

When urethral size precludes safe valve ablation, a communicating channel between the bladder and lower abdominal wall (ie, vesicostomy) can be created to provide bladder drainage[29,36,37]. Bilateral cutaneous ureterostmies can also be placed for urinary drainage[16,37].
Most fatalities occur because of underlying renal dysplasia. Some children with minimal renal reserve eventually develop renal failure and require transplantation. Urinary incontinence and/or urethral stricture problems are also common[38,39].

AIMS AND OBJECTIVES

A study was planned at Department of Urology Allied Hospital Faisalabad with following aims & Objectives.

To record the various clinical presentations of PUV.
To audit our experience in management of PUV.
To document various complications of PUV and its surgical management.

MATERIAL & METHODS

Study was conduced at Department of Urology Allied Hospital Faisalabad. from 01-01-2000 to 31-07-2004. All male patients (children, infants & neonates) presented with various symptoms and signs of PUV were included in the study. Detailed history & clinical examination was performed in each case.

Urine complete examination, blood urea/creatinine and serum electrolytes were performed in each case. Ultrasound of abdomen & kidney, ureter, bladder was performed in all patients. Diagnosis was confirmed by Micturating cystourethrogram (MCUG). Patients were treated with fulguration/ablation of posterior urethral valves by pediatric resectoscope under general anesthesia. Patients which were not fit for surgery, due to raised urea/creatinine, feeding tube was passed for few days (7-15 days). Vesicostomy was performed to drain the bladder if more than one month was required for definite surgery.

Patients had to be dialyzed to lower urea / creatinine which did not respond to bladder decompression. Antibiotics according to culture/sensitivity were given in patients having persistent of infections in low doses till they were clear of infection. This was proved by repeated urine culture/sensitivity examinations.

Patient were followed for 06 month, with fortnight visits. Urine examination and ultrasound KUB were performed in each visit. MCUG was performed in patients having persistent hydroureteronephrosis for more then 03 month to assess the presence of primary vesicoureteric reflux. Data collected was analyzed by chi-square.

RESULTS

A total of 32 male patients having PUV were included into the study. Age range from 40 days to 27 years with median age of 77.72 months (Table-I).

Table I Age distribution of patients

Age groups	No of pts	%age
1 day to 2 yrs	10	31.25
>2-5 years	9	28.12
>5-10 years	9	28.12
> 10 years	4	12.5

14(44%) presented with urinary retention. Poor stream and dribbling was the presenting complaints in 13

patients (41%). Overflow incontinence was present in 02 patients (6%). Associated fever was present in 23(72%) patients (Table -II).

Table II Presentation of patients		
Symptoms	**No of pts**	**%age**
Urinary Retention	14	44
Dribbling/poor stream	13	41
Overflow incontinence	2	6
Failure to thrive	3	9
Associated fever	23	72
Associated vesicoureteric reflux	7	22

Feeding tube had to be passed in 21(66%) patients to relieve the obstruction and for the correction of urea, creatinine and electrolytes. Vesicotomy was performed in one patient. In one patient, dialysis had to be performed to correct the raised creatinine and raised K level before ablation of valves.

Diagnosis was confirmed by micturating cystourethrogram in all cases. This shows dilated and elongated posterior urethra, with obstructing membrane.

Vesicoureteric reflux was present in 07 patients (22%), out of which 05 had unilateral reflux and 02 had bilateral Vesicoureteric reflux.

Ablation of posterior urethral valves was done in all patients by pediatric resectoscope of 8 fr made by wolf, with lower current. All patients had type I posterior urethral valves.

In post operative period, complications occurred in 13 patients (41%). Extravasation of urine due to perforation in urethra occurred in one patient. Bladder had to be drained for 10 days with per cutaneous cystostomy in this patient. Extravasated fluid absorbed and rent closed in this period. 10 patients (31%) had urinary tract infections post operatively for variable period of time. Majority (08) of patients settled within two weeks. In two patients antibiotics had to be given in low doses for six months. Repeated cultures of urine were performed in these patients to confirm presence/absence of infections. Enuresis was present in 07 patients. These patients improved in 06-09 months. One patient had urinary incontinence both day & night time. Day time incontinence was improved in a period of one year in this patient.

One patient developed CRF and was advised renal transplant. One patient expired in the post operative period, due to severe respiratory tract infections and respiratory failure on 15th post-operative day.

MCUG was performed in three patients having persistent hydro-nephrosis on ultrasonography 03 months post operatively. Two of these patients had vesicoureteric unilateral reflux (left). Low dose antibiotics were given to prevent infection along with conservative measures. After 06 months again MCUG was performed to assess the VUR. One patient improved with this treatment. Ureteroneocystomy (Lt. Sided) was advised in second patient due to persistence of VUR grade-III.

DISCUSSION

Posterior urethral valves are the most common cause of infra vesical obstruction in male children. The disorder has a broad spectrum of severity. Patients can develop complication on long term even after valve ablation.

Mortality rate associated with posterior urethral valves has dropped from 50% to less then 5% in the past few decades[21].

Improvements in neonates nursing care, excellent antibiotics, renal dialysis, better anesthetic facilities have contributed equally to the decline in mortality.

Clinical presentations of posterior urethral valves in our series are comparable to other series[16]. Difference lies in the antenatal management of bladder out flow obstruction which is lacking due to lack of expertise and gadgets in our setup.

Ablation of post urethral valves, out come and its complications are also comparable to other studies[16]

In this series 07 patients (22%) has vesicoureteric reflux. Out of these 05 (16%) has left unilateral and 02 (6%)has bilateral vesicoureteric reflux. It was relatively less as reported in another series[14]. Reflux subsided in majority of cases (5 patients) with ablation of posterior urethral valves within 03 months and in one patient in 06 months. In one patient reflux was present even after one year. Ureteroneocystostomy was planned in this case. This data is comparable with other studies[14].

Nocturnal enuresis was present in 07(22%) patients which gradually recovered over a period of one year in 04 patients. UTI was present in 10 patients (31%). Antibiotics were given in there patients according to culture and sensitivity for a period of 2 weeks to 6 months. This is comparable to other studies[11,16,22,30]. One patient expired in this series with a mortality rate of 03% comparable to other series[21].

CONCLUSION

Valve ablation is the mainstay of treatment for posterior urethral valves. Prenatal and postnatal factors such as renal dysplasia and urinary tract infection respectively in addition to valve ablation dictate the long term renal outcome.

Urinary diversion like vesicostomy and drainage by feeding tube, improves the final outcome of these patients.

Antenatal diagnosis and management of posterior urethral valves and bladder out flow obstruction is deficient area in our country. Steps should be taken to overcome these deficiencies, like antenatal USG, bladder drainage by vesico-amniotic shunts, and ablation of valves in uterine cavity etc.

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