

Long Term Outcome of Treated Posterior Urethral Valve Patients at a Tertiary Care Center

Neha Agarwal¹, Neeraj Agarwal², Megha Agarwal³

¹Assistant Professor, Department of Pediatrics ²Associate Professor, Department of Urology ³Assistant Professor, Department of Obstetrics & Gynaecology, SMS Medical College, Jaipur, Rajasthan 302004, India.

Abstract

Background: Posterior urethral valve is one of the most common causes of bladder outlet obstruction. It's congenital defects which most commonly affect male children. **Aim:** The aim of this study is to evaluate the Long term outcome of treated posterior urethral valve patients at a tertiary care center. **Materials and Methods:** The Present study was conducted in SMS Medical College & Hospital, Jaipur, Rajasthan, India. A total of 40 patients with mean age of 2 years were selected for the study. Parameters like, including age at presentation, serum creatinine, initial creatinine clearance, renal ultrasound findings and ascites were studied. Long-term renal outcome was assessed. **Results:** Of the 40 patients 18 were aged below 2 years i.e. 45%, 21 were aged between 2 to 4 years i.e. 52.5% and 9 of the were aged between 5 to 7 years i.e. 22.5%. Primary fulguration was carried in 77.5% cases and fulguration diversion in 22.5%. **Conclusion:** Posterior urethral disease is very common though its rate has declined for past few years. Urethral valve ablation is safe and easy procedure to be carried out.

Keywords: Urethral Valve; Tertiary Care Unit; Creatinine; Renal Dysfunction.

Introduction

Posterior urethral valve are most common caused congenital urethral abnormality. It is known for causing bilateral renal obstruction [1]. Freedman AL et al reported that posterior urethral valve obstruction is very common in male infants and children [2]. Despite of the recent advances in diagnosis many authors reported that 20% to 40% patients suffer renal failure [3,4]. Posterior urethral valve severity totally depends upon the degree of urinary obstruction. If not treated timely it progresses to renal failure [5].

Diagnostic aids like ultrasonography and postnatally on micturating cysto-urethrogram are used to view the dilated urethral valves. Factors such as age at presentation, initial and nadir serum creatinine, renal parenchymal echogenicity on initial renal ultrasound, VUR on initial VCUG, recurrent UTIs, bladder dysfunction and the presence or absence of popoff mechanisms such as

VURD plays a important role in outcome and prognosis of the disease. The main motto of the treatment is to prevent renal failure [3,7,8]. The rate of renalfailure according to the literature in about 19-64% of males diagnosed with PUV prenatally and in 25-40% of infants diagnosed postnatally [9]. So, we aimed to evaluate the Long term outcome of treated posterior urethral valve patients at a tertiary care center.

Materials and Methods

A total of 40 patients suffering from posterior urethral valve admitted in SMS Medical College & Hospital, Jaipur, Rajasthan (India) were selected for the study. All the male infants and children above 6 months of age with posterior urethral valves who were treated with endoscopic valve fulguration were included in the study. Infants below 6 months of age, critically ill child, patients with urosepsis or

Corresponding Author: Neeraj Agarwal, Associate Professor, Department of Urology, SMS Medical College, Jaipur, Rajasthan 302004, India.

E-mail: rohingarg99@gmail.com

Received on 24.03.2018, Accepted on 10.04.2018

septicemia and patients with renal failure were excluded from the study. Ultrasound abdomen, micturating cysto-urethrogram (MCUG) and cystoscopy were used for the diagnosis of each patient. Routine blood investigation was performed during hospitalization. A written informed consent was obtained from parents/guardians before the treatment. All the surgical procedure was performed under general anesthesia. Antibiotic was given for 3 years. The outcome of the disease was assessed clinically, biochemically and radiographically. After 3 to 5 days patients were discharged and antibiotic was continued for another 5 to 7 days. Patients parents were asked to report for follow up.

Data Analysis

Data so collected was subjected to analysis using Statistical Package for Social Sciences (SPSS) Version 15.0. Non parametric data has been represented as frequencies and percentages.

Results

A total of 40 patients with posterior urethral valve were selected for the study. Participants included were aged above 6 months with mean age of 2 years. Of the 40 patients 18 were aged below 2 years i.e. 45%, 21 were aged between 2 to 4 years i.e. 52.5% and 9 of the were aged between 5 to 7 years i.e. 22.5%. Most common age group in our study was 2 to 4 years (Table 1). Of the 40 patients 31 patients underwent primary fulguration i.e. 77.5% and 9/40 underwent fulguration diversion i.e.

22.5% (Table 2).

Among 40 patients 25 reported us with fever i.e. 62.5%. 52% patients complaint of dribbling of urine, 37.5% were found to be suffering from abdominal swelling, 30% complaint of inconsistence urine whereas only 2.5% were suffering from haematuria (Table 3). Recurrent UTI was observed in 21/40 patients i.e. 52.5%, 12/40 showed up with urine inconsistency i.e. 30%, 4/40 presented with stricture urethra i.e. 10%, 2 suffered from renal failure and enuresis was evident in 2/40 i.e. 5%. Most common complication in present study was recurrent UTI (Graph 1).

Table 1: Age Distribution of Patients

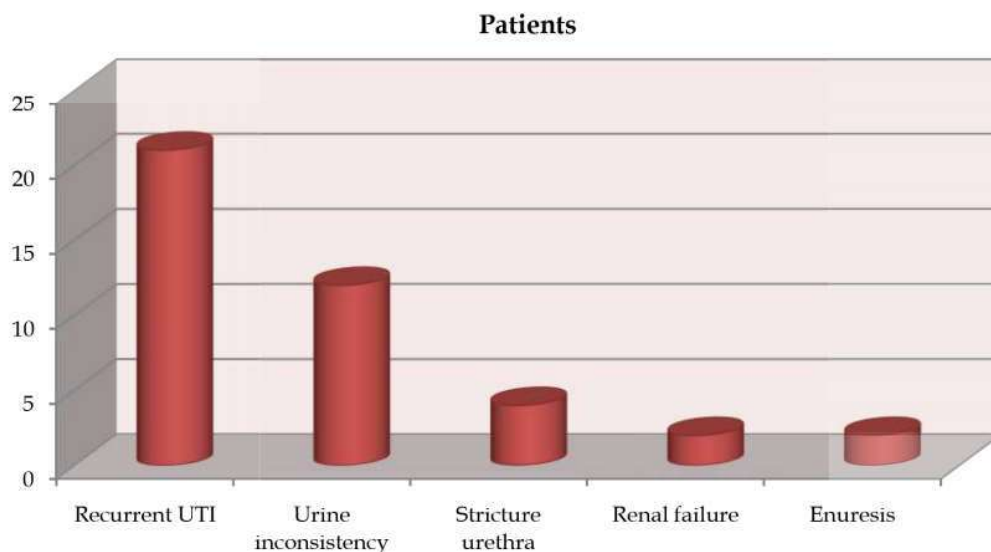
| Age | No. of cases | Percentage |
|-------|--------------|------------|
| <2 | 18 | 45% |
| 2-4 | 21 | 52.5% |
| 5-7 | 9 | 22.5% |
| Total | 40 | 100% |

Table 2: Demographic Details

| Procedure | Number of patients |
|----------------------------|--------------------|
| Primary fulguration | 77.5% |
| Fulguration with diversion | 22.5% |
| Total | n = 40 |

Table 3: Presenting sign and symptom in patients

| Sign and Symptom | Patients | Percentage |
|---------------------|----------|------------|
| Fever | 25 | 62.5% |
| Dribbling | 21 | 52% |
| Abdominal Swelling | 15 | 37.5% |
| Inconsistence Urine | 12 | 30% |
| Hematuria | 1 | 2.5% |



Graph 1: Complications after procedure

Discussion

Posterior urethral valve is a common congenital urinary bladder abnormality which is known for its deleterious effect. According to the researchers recently there is an increase in prognosis of the disease. Authors have reported that its mortality rate has decreased from 50% to less than 5% in the last 30 to 40 years [10]. However, there is no much improvement in prenatal diagnosis of posterior urethral valve. Prenatal diagnosis can help to prevent the harmful effect of the congenital disease. Delayed diagnosis leads to poor prognosis and renal damage.

In present study the most common age group was 2 to 4 years i.e. 52.5%. The mean ages of the patient were 2 years of age. Some authors reported that most of the patients reported to them at an age of 1 year [12]. Diamond DA in the year 1992 suggested that PUV can be suspected *in utero* with the help of prenatal ultrasonography the presence of hydronephrosis, dilated proximal urethra, thickened bladder wall, and oligohydramnios can be evident [13]. However, other authors recommended that Fetal intervention for PUV can be a considerable risk to the fetus with a fetal mortality rate of 43% [14]. Fulguration diversion was done in 22.5% cases. Several studies have suggested that urinary diversion is not warranted because it rarely affects renal outcome [15,16]. Most common sign and symptom evident in current was fever (62.5%), dribbling (52%), abdominal swelling (37.5%) and inconsistent urine (30%). Voiding dysfunction was one of the common causes of presentation in our study. Many other authors have mentioned voiding dysfunction to be the main sign and symptom in posterior urethral valve [17,18].

Posterior urethral valve is often associated with complications. In current study most complication evident was recurrent UTI 52.5%. Our results were similar to those reported by Kifayat Khan et al. [19]. In current study there was no fatality reported. After recurrent UTI, urine inconsistency was most common and only 5% cases of renal failure and enuresis. Urinary inconsistency is considered to be most commonly occurring complication after posterior urethral valve treatment [20]. 20% of patients achieve consistency urine after treatment of PUV. Spontaneous improvement is seen in patients after puberty [10]. 25 to 50% patients suffer from renal failure as late complications after posterior urethral valve treatment. However only 5% was observed in current study [21]. Progression of renal failure is independent of the type of treatment provided.

Conclusion

Endoscopic valve fulguration is an effective method for treatment of posterior urethral valve. Most common age group was 2 to 4 years. If treated at an early stage it can reduce the fatality rate. Complications like recurrent UTI, renal failure, urine inconsistency were evident. The outcome of the disease can be improved early and accurate diagnosis.

References

1. Yohannes P, Hanna M. Current trends in the management of posterior urethral valves in the pediatric population. *Urology* 2002;60:947-53.
2. Freedman AL, Johnson MP, Gonzalez R. Fetal therapy decreased for obstructive uropathy: past, present and future? *PediatrNephrol* 2000;14:167-76.
3. Reinberg Y, de Castano I and Gonzalez R. Prognosis for patients with prenatally diagnosed posterior urethral valves. *J Urol* 1992;148:125.
4. El-Ghoneimi A, Desgrippes A, Luton D et al: Outcome of posterior urethral valves: to what extent is it improved by prenatal diagnosis *J Urol* 1999;162:849.
5. Morri SR, Malin G, Khan K, Kilby M. Antenatal ultrasound to obstruction: systematic review of test accuracy. *BJOG* 2009;116:1290-1299.
6. Martinez JM, Masoller N, Devlieger R, et al. Laser ablation of posterior urethral valves by fetal cystoscopy. *the Fetal Diagnosis and Therapy* January 2015; Doi: 10.1159/000367805.
7. Lopez Pereira P, Espinosa L, Martinez Urrutina MJ et al. Posterior urethral valves: prognostic factors. *BJU* 2003;91:687.
8. Rittenberg MH, Hulbert WC, Snyder HM et al. Protective factors in posterior urethral valves. *J Urol* 1988;140:993.
9. Rainer H, Tanja B, Matthias MW, Ismail T, Felix S, Stephen S. Fetoscopic placement of a transurethral stent for intrauterine obstructive uropathy. *J. Urol.* 2004;171:384-6.
10. Churchill BM, McLorie GA, Khoury AE et al: Emergency treatment and long-term follow-up of posterior urethral valves. *UrolClin North Am* 1990; 17:343.
11. Roth KS, Carter WH Jr, Chan JC. Obstructive nephropathy in children: Long term progression after relief of posterior urethral valve. *Pediatrics* 2001;107:1004-10.
12. Ikuerowo SO, Balogun BO, Akintomide TE, Ikuerowo AO, Akinola RA, Gbelee HO, et al. Clinical and radiological characteristics of Nigerian boys with

- posterior urethral valves. *PediatrSurg Int.* 2008;24: 825-9.
13. Diamond DA, Ford C, authors. Neonatal gross hematuria as a presenting sign of posterior urethral valves. *Urology.* 1992;40:267-9.
 14. Holmes N, Harrison MR, Baskin LS. Fetal surgery for posterior urethral valves: long-term postnatal outcomes. *Pediatrics* 2001;108:E7.
 15. Close CE, Carr MC, Burns MW. Lower urinary tract changes after early valve ablation in neonates and infants: is early diversion warranted? *J. Urol.* 1997; 157:984-8.
 16. Walker RD, Padron M. The management of posterior urethral valves by initial vesicostomy and delayed valve ablation. *J. Urol.* 1990;144:1212-14.
 17. Hodges SJ, Patel B, McLorie G, Atala A. Posterior urethral valves. *ScientificWorldJournal.* 2009;9: 1119-26.
 18. Ikuero SO, Balogun BO, Akintomide TE, Ikuero AO, Akinola RA, Gbelee HO, et al. Clinical and radiological characteristics of Nigerian boys with posterior urethral valves. *PediatrSurg Int.* 2008;24: 825-9.
 19. Kifayat Khan et al. Management of Infants and Children with Posterior Urethral Valves: Early Outcome of Endoscopic Valve Fulguration in a Tertiary Care Hospital in Peshawar. *Journal of Saidu Medical College* 2017, Vol 7 (1).
 20. Cass AS, Stephens FD. Posterior urethral valves: diagnosis 38 and management. *J Urol* 1974;112:519-25.
 21. De Gennaro M, Mosiello G, Capitanucci ML Early in children with posterior urethral valves after kidney detection of bladder dysfunction following posterior urethral valves ablation. *Eur J PedSurg* 1996;6:163-5.
-