Role of Urethral Dilation in Females with Recurrent Urinary Tract Infections

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ABSTRACT

Introduction: Urinary tract infection is a trivial problem suffered by women these days. Dilation of female urethera is most commonly performed in patients with urinary tract infection. Out of these almost 25% suffer from recurrence of this disease after complete treatment. According to a survey every 1 in 3 women has been treated for urinary tract infection by the age of 24 years. In this article we discuss the most common presenting symptom of recurrent urinary tract infection and their management with various surgical modalities.

Material and methods: The present study was conducted over a period of 4 years involving 125 female patients of recurrent urinary tract infection. Diagnosis was based on clinical and laboratory investigations. Patients underwent different surgical modalities for treatment. Recurrence rate of each of the treatment modality was established and analyzed.

Result: 125 female patients with a mean age of 51 were enrolled in the study. Majority of patients i.e. 17.6% of patients presented with increased frequency of micturation as their chief complaint. Only 9.6% of patients presented urinary retention and straining. Maximum recurrence rate i.e. 89% was seen in patients with uretheral dilation.

Conclusion: Treatment of recurrent urinary tract infection by urethral dilation is controversial as there is a high recurrence rate but still it is the most commonly performed treatment by urologists.

Keywords: Bacteria, Dilation, Urethra, Recurrence.

INTRODUCTION

Recurrent urinary tract infection is defined as three episodes of urinary tract infection with three positive urine cultures in the previous 12 months or two episodes in last six months.[1] It affects almost 25% of women with isolated urinary tract infections.[2] Treating recurrent urinary tract infections presents one of the most challenging situations to the physician. According to a survey every 1 in 3 women has been treated for urinary tract infection by the age of 24 years.[3] Approximately 27% of the urinary tract infections were found to recur once and 3% recur during second time.[4] A precise and accurate diagnosis and treatment planning result in successful elimination of most of the infections. Various bacterial and host factors play a role in pathogenesis of urinary tract infection and understanding of this is very essential for treatment of recurrent urinary infection.[5] Normally urinary tract is sterile, urinary tract infection results when normal bacterial flora in the periurethral area are replaced by uropathogenic bacteria which ascend to further structures like upper urinary tract, kidneys or blood stream to cause infection. The presentation normally ranges from fever, urgency to life threatening sepsis and death.[6] A urinary tract infection is considered recurrent only when it occurs after complete resolution of previous urinary tract infection.[7] Both conservative (non surgical) and surgical treatment modalities are available for treating recurrent urinary tract infection. In this article we discuss the most common presenting symptom of recurrent urinary tract infection and their management with various surgical modalities.

MATERIAL AND METHODS

The present prospective study was conducted in the Dept of Surgery, Sukh Sagar Medical College and Hospital, Jabalpur, over a period of 2 years (January 2015 - December 2016). A total of 125 females between the age group of 33-69 years reported to the department of surgery with recurrent urinary tract infection. Most of the patients already had a course of antibiotic before referral. The diagnosis of recurrent infection was complete history and physical examination. The history and physical examination was focused on ruling out structural or functional abnormalities of the urinary tract (complicated UTI). Medically compromised patients not fit for surgery under general anaesthesia were excluded from the study. Urine culture and blood urea was done in all of the cases. For culturing midstream urine sample was obtained after preparation of genitalia. A colony count of 100,000/ml or more was interpreted as significant infection. Preoperative antibiotics (cotrimoxazole, nitrofurantoin, nalidixic acid, gentamicin) was given to all the patients for a period of 2 weeks before undergoing surgical treatment. 89 patients underwent dilation with clutton dilators. Dilation was done upto 20-320 F. 10 patients underwent vaginal flap uretheroplasty. 14 patients underwent vaginal flap uretheroplasty with concomitant pubovaginal sling. 8 patients underwent vaginal flap uretheroplasty with martius flap and 10 patients underwent uretheroplasty with diverticulotomy. Postoperative antibiotics were prescribed to all the patients for a period of 12 weeks. The patients were followed up at an interval of 6 months, 12 months, 24 months and 30 months interval. Any patient reporting with any symptom of infection was considered as a positive finding and regarded as a recurred case. The recurrence rate was calculated amongst all the treatment modalities. Data was recorded as rate of recurrence.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the statistical analysis.

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Symptom	No. of patients	percentage
Weak stream	13	10.4
Dysuria	16	12.8
Frequency	22	17.6
Incontinence	16	12.8
Urgency	19	15.2
Urinary retention	12	9.6
Nocturia	15	12
Straining	12	9.6

Table-1: Signs and symptoms of recurrent urinary tract infection in study group

Treatment done	No. of patients	Recurrence (%)
Dilation	89	89%
VFU	10	11%
VFU, PVS	14	7%
VFU + diverticulectomy	10	3%
VFU, PVS, Martius flap	8	2%

Table-2: Recurrence rate after follow up

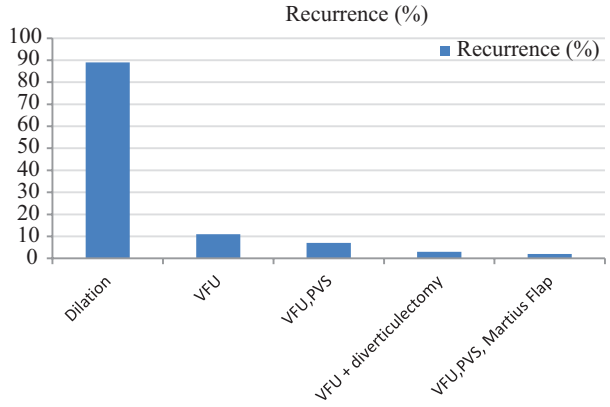

Figure-1: Depicting the percentage recurrence rate after treatment

Descriptive statistics like mean and percentages were used for the data analysis.

RESULT

A total of 125 female patients were enrolled in the study with the mean age of 51 years.

Table 1, illustrates the most common presenting signs and symptoms of recurrent urinary tract infection. 17.6% of patients presented with increased frequency of micturation as their chief complaint. Only 9.6% of patients presented urinary retention and straining. Around 15.2% of patients presented with urgency. Increased frequency of micturation was the most frequently encountered symptom.

Table 2, Figure 1 illustrates the treatment modalities that were undertaken and the percentage of recurrence amongst them. Around 89% of patients with uretheral dilation reported with recurrence. The recurrence rate was very high in this group. The least recurrence rate was seen in patients with uretheroplasty and martius flap ie only 2%.

DISCUSSION

Recurrent urinary tract infection is a major health concern amongst healthy and sexually active women. In our study all the female patients were aged between 33-62 years with a mean age of 51 years. Uropathogens responsible for causing urinary tract infection originate from extraurinary location which is generally rectal flora and ascend to the bladder from this colonised area. The usual pathogens include Escherichia coli, Klebsiella pneumonia, Staphylococcus saprophyticus and Proteus mirabilis.[7] Escherichia coli is thought to be responsible for recurrent urinary tract infections in 85% of ambulatory patients and 50% of nosocomial infections.[8]

According to a study by Hoton et al, the risk factors associated with urinary tract infection are the use of spermicides, females aged less than 15 years at the time of first urinary tract infection are at greater risk. Family history of urinary tract infection indicating genetic or environmental exposure predisposes to this condition. Urinary incontinence, uterovaginal prolapsed, post void residual urine are some of the other risk factors associated with urinary tract infection. Presence of urinary catheter, ureteric stent or any other factors that lead to urinary stasis like malignancy, cyst lead to an increase in risk of complicated urinary tract infection with multi resistant pathogens. Medically compromised patients like diabetes mellitus, renal failure, renal transplantation have a two to three fold increased incidence of recurrent urinary tract infection.[9]

According to a study by KK yadav et al[10], 24% of the patients required uretheral dilation at the end of 5th month. In our study the recurrence rate of urinary tract infection was 89% in patients who underwent uretheral dilation. Smith et al[11] conducted a study in 7 women with urethral strictures in which dilation was performed upto 30Fr which was followed by clean intermittent catheterization. After 6 to 34-month follow up period 3 of 7 women required multiple repeat urethral dilations. In a study by Jerry G et al[12], only 1 out of 17 patients had a sustained response to dilation alone. This high recurrence rate is a clear indicator that urethral dilation is not a sure shot treatment for recurrent urinary tract infection. But according to a study by Roberts and smith[13] they have shown symptomatic improvement in 80% of cases after urethral dilation. Bergman et al[14] and others[15,16] demonstrated improvement in 75% of cases.

CONCLUSION

Recurrent urinary tract infection is a common problem faced by women these days but its treatment with urethral dilation is still controversial. The prognosis of urethral dilation is questionable. Majority of the patients require repeated dilations to ward of symptoms.

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