A comparative study of alpha-1a blockers (tamsulosin) versus estrogens in the treatment of lower urinary tract symptoms in perimenopausal females

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Abstract:

OBJECTIVE: Lower urinary tract symptoms (LUTS) in perimenopausal females are very common. It can be treated with alpha-blockers or application of topical oestrogen. The purpose of this study is to compare the efficacy of alpha-blockers versus topical estrogen in the treatment of LUTS in perimenopausal females.

MATERIALS AND METHODS: All perimenopausal females between the age group of 45 and 60 years who present with the symptom of voiding LUTS were divided into two groups. Acute urinary retention patients were excluded from the study. The first group was given alpha-blocker (tamsulosin) and other group was given topical estrogen application (0.5%–1%) in the periurethral region. Patients were followed up clinically by voiding components of the International Prostate Symptom Score and objectively by uroflowmetry and postvoid residual (PVR) urine estimation (ultrasonography).

RESULTS: Alpha-blocker group had 40 females and topical estrogen group had 40 females. During the 6-week period, 8 patients of the first group and 6 patients of the estrogen group discontinued the treatment. In the first group, pretreatment mean Qmax (maximum flow rate) of patients was 7.2 ml/s and posttreatment Qmax was 18.4. In the second group, the values were 7.4 ml/s and 10.2, respectively. This difference was statistically significant ($P < 0.0001$). In the first group, pretreatment PVR urine was significant, which became insignificant after the treatment, whereas in the second group, PVR was significant posttreatment also.

CONCLUSION: Alpha-1a blockers should be used as the first-line medical management in perimenopausal females with symptoms of LUTS, as they have a clear advantage over topical estrogens.

Keywords: Estrogen, perimenopausal, tamsulosin, uroflowmetry

Introduction

Lower urinary tract symptoms (LUTS) in perimenopausal female are mainly due to urethral stenosis. There are problems of bladder outlet obstruction and impaired contraction of the detrusor in patients of chronic urinary retention. In these women, treatment options are based on urethral dilatation and catheterization.

As catheterization or urethral dilatation is uncomfortable to the patient and sometimes needs repetition, there was always a search for pharmacotherapy. As the lack of estrogen is one of the contributing factors for urethral stenosis in perimenopausal women, topical estrogen cream application is popular among gynecologist and is being practiced over the years. In some recent reports, some encouraging results are found with the use of oral alpha-1a blockers.

How to cite this article: Maiti K, Jaiswal A, Pal DK. A comparative study of alpha-1a blockers (tamsulosin) versus estrogens in the treatment of lower urinary tract symptoms in perimenopausal females. Indian J Pharmacol 2020;52:6-9.
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The existing literature says that alpha-1a blockers have good results in improving LUTS in perimenopausal females as well as estrogen also acts as a good agent in relieving LUTS. There is a knowledge gap between the efficacy of results between these two agents. Hence, in this study, our research question will be to compare the treatment options by alpha-1a blockers and topical estrogen in the treatment of LUTS in perimenopausal females and also to strengthen the existing literature about the efficacy of both the agents in the treatment of LUTS in perimenopausal females.

Aims and objective
The aim of the study was to compare the outcome of alpha-1a blockers and topical estrogen in the treatment of LUTS in perimenopausal females.

Materials and Methods
This study was performed in the department of urology in a tertiary care hospital of Eastern India between September 2017 and August 2018. All perimenopausal females between the age group of 45 and 60 years, who presented to the outpatient department and who fulfilled the inclusion criteria, were part of the study. Institutional ethical committee clearance was obtained for the study. More than 90% of the patients presented were from low socioeconomic status and 10% of the patients were from low middle-class society. All of them were housewives by occupation. Proper written consent was obtained from the patients to be included in this study. All perimenopausal females between the age group of 45 and 60 years presented with the retention, past history of urethral dilatation, or having urinary infection were excluded from the study. All other patients between the age group of 45 and 60 years having LUTS were included in the study. The first group was given alpha-1a blocker (tablet tamsulosin 0.4 mg OD HS) and other group was given estrogen in the topical form (0.5% to 1% twice daily) for application topically in the periurethral region. Patients were followed up with clinical features of the International Prostate Symptom Score (IPSS) (i.e., poor stream, intermittency, straining, and incomplete voiding) and objectively by uroflowmetry and postvoid residual urine (PVR) estimation (ultrasonography [USG]).

Primary endpoints included improvements in the flow of urine as estimated by uroflowmetry and decrease in PVR urine as estimated by USG. Secondary endpoints included clinical improvements of voiding symptoms (i.e., poor stream, intermittency, incomplete voiding). After that, data analysis was done. The statistical test used to analyze the results was unpaired t-test.

Results
Perimenopausal women were divided into two groups and females of each group were given either alpha-1a blocker or topical estrogen [Figure 1]. The mean age group of patients was 49.2 years (46–55 years). Alpha-1a blocker group had 40 females and topical estrogen had 40 females. During the 6-week period, 8 females of the first group and 6 patients of the estrogen group discontinued the treatment [Figure 1].

Patients were followed up with uroflowmetry and PVR urine assessment with USG. In the first group, pretreatment mean Qmax (maximum flow rate) of patients was 7.2 ± 1.1 ml/s and posttreatment Qmax was 18.4 ± 1.8. In the second group, pretreatment Qmax was 7.4 ± 1.0 ml/s and posttreatment Qmax was 10.2 ± 1.9 [Figure 2]. This difference was statistically significant (P ≤ 0.0001). In the first group, pretreatment PVR urine was significant, which became insignificant after the treatment, whereas in the second group, PVR was significant posttreatment also [Figure 3 and Table 1].

Secondary outcome measures have also been compared such as clinical improvements in the LUTS symptoms of the patients. In the first group, 64% of the patients had an improvement in clinical symptoms, whereas in the second group, only 12% had an improvement of symptoms. This difference was clinically significant.

Discussion
LUTS in perimenopausal females are one of the major urological issues among them. This leads to considerable inconvenience and comorbidities to females. Several studies revealed that LUTS are common among females. About 15.5%–53.7% of the adult women are affected by LUTS and it can affect their social life very badly.[1,2] LUTS may be categorized into irritative and obstructive

Figure 1: Flowchart showing number of patients in both the modalities
symptoms. There are changes in the bladder due to aging such as the decreased capacity of the bladder and estrogen loss, which further develops in LUTS. However, nowadays, it is also a common health problem among women in the younger age group.

The treatment of perimenopausal LUTS includes conservative management and pharmacological management such as alpha-blockers and anticholinergics. Topical estrogens are also used in the management of LUTS in perimenopausal females. There are many evidence in trials which prove the efficacy of alpha-adrenoceptor antagonists in female patients with LUTS. Recent studies show that alpha1-adrenoceptor antagonists are useful in improving voiding symptoms in women with nonneurogenic bladder with outlet obstruction or underactive detrusor. Estrogen works by acting on estrogen receptors in urethral mucosal cells by aborting atrophy of mucosal cells due to a lack of estrogen in perimenopausal females. Alpha-1a blockers act by selective blockage of alpha-1a receptors present in the bladder neck and relieve obstruction.

There are few literatures which showed the effect of topical estrogen in improving LUTS in perimenopausal females. However, in majority of studies, there were less number of women participants, diversity in clinical and urodynamic outcomes, and short duration of treatment.

However, in our study, we got major clinical improvements in the first group, i.e., alpha-blocker group. Pre- and posttreatment difference in Qmax in alpha-blocker group was significant because of its relaxing effect on the bladder neck and urethra, whereas in the second group (estrogen group), this difference was very minute as compared to alpha-blocker group. Various studies have been done which showed the superiority of alpha-blockers in the management of LUTS symptoms in perimenopausal females.

According to the literature, topical estrogen has the advantage over alpha-blockers in having less side effects as compared to alpha-blockers, but there are some studies which contradict this statement, such as Lee et al. conducted a study on female patients who presented with symptoms of LUTS. They used tamsulosin (alpha-1a blocker) to know about the potential effects of alpha1-blocker in female patients with voiding LUTS. They observed that 33.0% of the patients showed an elevation of more than 50% in Qmax with very few side effects after 8 weeks of treatment. They concluded that tamsulosin is an efficacious drug in female patients with obstructive urinary symptoms regardless of its grade. There is a significant reduction in mean and maximal urethral pressure over the entire urethra after using tamsulosin 0.4 mg orally. In a study conducted by Kessler et al., nonselective alpha-blockers were used in the treatment of functional urinary obstructive symptoms in 15 women. The assessment of symptoms and urodynamic parameters was done before and 4 weeks after the initiation of alpha-blocker therapy. The result was that there was a significant increase from 9 s to 20 s in the median maximum flow rate. They concluded that alpha-blockers had a significant role in the improvement of symptoms and urodynamics in two-third of the patients. Ahmad et al. also concluded in their study that tamsulosin significantly decreases IPSS and PVR and improves Qmax, so they should be used.
as the first-line pharmacological agent for moderate to severe LUTS in women.\(^7\)

According to our study, there is a major decrease in PVR urine in alpha-blocker group, whereas in the topical estrogen group, a decrease in PVR urine was minimal. This finding was supported by many studies which shows the superiority of alpha-blocker in the management of LUTS in perimenopausal females.\(^7\) Lee et al. reported a decline of PVR from 69.13 + 85.45 of baseline to 39.88 + 48.39 after 8 weeks of treatment \((P < 0.01).\(^4\)

The present study concludes that there was a significant improvement in IPSS, Qmax, and PVR after tamsulosin treatment in female patients.

**Conclusion**

The conclusion of this study is that alpha-1a blockers should be used as a first-line medical management in perimenopausal females with symptoms of LUTS, as they have a clear advantage over topical estrogens in improvement in symptoms of LUTS (improvement in Qmax, decrease in PVR, and clinical improvement).

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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