

STUDY ON THE CORRELATIONS BETWEEN THE TREATMENT OF FREQUENT MICTURITION WITH TOLTERODINE AND THE FIRST SENSATION VOLUME OF BLADDER

Hypothesis / aims of study

Some study shows with evidence that antimuscarinic drugs have depressant influence not only on bladder muscle activity, but also on bladder sensations[1]. As we know increased sensation of bladder would result in frequent micturition [2]. We can assume that tolterodine would decrease the frequency of micturition through its function of inhibiting bladder sensation. The objective of this study is to assess the correlation between the frequency of micturition and the bladder First Sensation Volume (FSV) and to appraise the correlation between the effect of treatment on micturition with tolterodine and the FSV

Study design, materials and methods

Data collected from observations on 38 patients (14 male, 24 female; age from 18 to 46, averaged 31.9±6.9 years) suffered from frequent micturition. Over 3 days daily records on sufferers' urination demonstrate that the average micturition frequency of all the patients was over 8 times per day and the volume was lower than 200ml per voiding, meanwhile all these patients were excluded from urinary infection, calculi, bladder outlet obstruction, urinary retention, bladder tumour, neurogenic bladder and over active bladder. All the patients have been examined with cystometry by way of filling with a speed of 60 ml/min and the FSV was recorded by the indication of patients' first sensation of urination on condition that the bladders was emptied before filling, perfusion fluid was 0.9% Sodium Chloride which was controlled at a temperature between 20°C and 25°C. The patients were administered Tolterodine L-Tartrate Sustained Release Capsules 4mg per night for 4 weeks. Assessment of therapeutic effect on frequent micturition was re-executed by urinary diary after four-week treatment. In order to determine relationship between the bladder sensation and the urination frequency, we took some studies on the FSV and the urination frequency level before treatment by way of "Spearman Correlation Analysis". Wilcoxon rank sum test was performed on number of voiding times before and after tolterodine treatment. The decrease of micturition frequency will be determined by the difference of voiding times per day before and after the tolterodine treatment. The decrease extent of micturition frequency and FSV was analyzed by way of "Spearman Correlation Analysis", which gave us a clear understand on the therapeutic effectiveness with tolterodine. A P-value ≤ 0.05 was considered as statistically significant. All the collected "Data" are expressed as "mean±SD".

Results

Before the therapy of tolterodine, FSV was 0~241ml, average 85.1±61.9ml, and the number of micturition times was 8.4 – 30.0 (averaged 15.1±5.9), and we noticed there exist a negative correlation between the FSV and the number of micturition times per day, $r=-0.894$, $P<0.001$; After treatment with tolterodine for 4 weeks, we can see the significant decrease on the number of voiding times per day since the number was decreased to 5.4~19.4 (averaged 9.2±3.6), the difference is -0.3~11.6 (average 5.9±2.7), $P<0.001$; The decreased extent of micturition frequency is negative correlation with FSV, $r=-0.857$, $P<0.001$;

Interpretation of results

Sensitive bladder would induce frequent micturition, but no definitive studied conclusion on the correlation between bladder sensation and the micturition frequency [3]. Through our observation and study, we discovered that FSV is negatively correlated with the micturition frequency, the data we collected is statistically significant. On another word, the higher the bladder sensation is, the more serious on the high frequency of micturition. After tolterodine treatment, the status of patients' micturition was significantly improved, moreover, the effectiveness is more evident on the patients who have lower FSV than the others, i.e.: the lower the FSV, the more evident on the reduction of micturition frequency. It hints that tolterodine repressed sensation of bladder, because the more hypersensitive of bladder, the more effective of tolterodine.

Concluding message

FSV is negatively correlated with frequency, The effectiveness of tolterodine on frequent micturition is definitive and evident, it's closely related with the bladder sensation, i.e.: the more hypersensitive of bladder, the more effective of tolterodine.

References

1. Neurourol. Urodynam(2010). 29:112–115,
2. BJU Int(2011) Nov 30. doi: 10.1111
3. Neurourol Urodyn (2011).30(7):1220-6

Disclosures

Funding: NONE **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** We examined usual treatment by usual medicine and a questionnaire **Helsinki:** Yes **Informed Consent:** Yes