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Okada H[1], Sato R[1], Kobori Y[1], Ashizawa Y[1], Yagi H[1], Soh S[1], Arai G[1]
1. *Department of Urology, Dokkyo Medical University Koshigaya Hospital*

WALKING IN THE MORNING IMPROVES NOT ONLY SLEEP CONDITION BUT ALSO NOCTURIA THAT FAILED TO RESPOND MEDICAL TREATMENT.

Hypothesis / aims of study
Lower urinary tract symptoms (LUTS) are becoming a major health problem for elderly men. Among them nocturia is a common condition often attributed in aging men to benign prostatic enlargement. Elderly men are prone to nocturnal sleep disturbance, of which disturbed circadian rhythm may be a component since it reportedly improves with nighttime administration of melatonin. This study was designed to elucidate the relationship between frequency of getting up at night to urinate and sleep condition and also to investigate walking under the sunshine in the morning as a potential treatment for nocturia associated with bladder outflow obstruction in elderly men.

Study design, materials and methods
Between January 2006 and December 2008, 30 consecutive elderly male patients with two or more voids per night (estimated prostatic volume >20g using transrectal or transabdominal ultrasonography) aged 65-84 (mean 75.5) years were enrolled in the study. The International Prostate Symptom Score (IPSS) of 8 or more was required for study entry. These patients had received standard medical therapy with α1-blocker for LUTS, followed by anticholinergic drugs and/or hypnotics, but they still complained about two or more episodes of nocturia. Firstly nighttime urinary frequency and frequency of sleep discontinuation were recorded. Secondary they were advised to have 30-60 minutes walk (on foot, on cane, or on wheelchair) under the sunshine in the morning for 30 days in addition to their BPH treatments. Daytime and nighttime urinary frequency, IPSS, relative nocturnal urine volume, maximum urinary flow rate and post-void residual were measured. The effects were assessed by questionnaire before and after treatment as excellent (nocturia disappeared or decreased by 2 or more voids/night), improved (nocturia decreased by 1 void/night), unchanged or worsened (nocturia increased).

Results
Nighttime urinary frequency and frequency of discontinuation of sleep was significantly correlated (Fig 1; $p<0.01$). After having a walk under the sunshine in the morning for 30 days nocturia improved or disappeared in 66% of patients: excellent, improved, unchanged and worsened results were obtained in 24%, 42%, 30% and 4%, respectively. The effects were better in patients whose baseline nocturia was > 2 times than in those with a lesser frequency at enrollment ($p<0.05$). Daytime urinary frequency (from 5.38 to 4.22, $p<0.05$) and IPSS (from 14.5 to 12.4, $p<0.05$) significantly improved. Nocturnal polyuria also significantly reduced (from 41.3% to 28.6%, $p<0.05$). However, maximum urinary flow rate and post-void residual were unaffected by treatment.

Interpretation of results
In elderly men with benign prostatic enlargement sleep was disturbed by nocturia (vice versa). To make it a rule to have a walk under the sunshine in the morning could correct disturbed circadian rhythm and provide good sleep in elderly men, and this simple custom reduced nocturnal urine production leading improvement of nocturia.

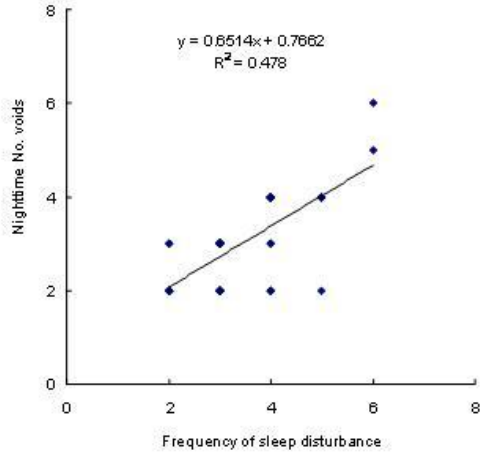

Fig. 1 Frequency of sleep disturbance vs. nocturnal urinary frequency

Concluding message

In elderly men with LUTS caused by benign prostatic enlargement whose nocturia failed to respond to medical treatment, walking under the sunshine in the morning is an effective treatment option.

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What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Ethical Committee of Dokkyo Medical University Koshigaya Hospital**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**