

MULTIPLE RISK FACTORS ANALYSIS OF NOCTURIA IN CHINESE PEOPLE OLDER THAN 40 YEARS OLD

Hypothesis / aims of study

Nocturia is a common urological abnormality, especially in the elderly population. However, the etiology of nocturia is inadequately understood. In our study we explored multiple risk factors for nocturia by multivariate analysis in 10160 Chinese inhabitants to provide a reference for further understanding of nocturia.

Study design, materials and methods

A randomized, community-based, cross-sectional study was performed on 10160 inhabitants aged over 40 years old in urban in mainland of China, using a stratified system sampling approach. A questionnaire including age, sex, level of education (illiteracy, primary school, etcetera, 5 levels in all), present occupation (workman, civil servant, retiree, etcetera, 11 levels in all), marital status (single, married, divorced, etcetera, 6 levels in all), tea consumption (none, occasionally or daily), body mass index ($BMI < 25 \text{ kg/m}^2$, $25 \leq BMI < 30 \text{ kg/m}^2$, $BMI \geq 30 \text{ kg/m}^2$), reproductive history (none, once, twice or more), sporting activities (very active, moderate or mild), diabetes mellitus (DM) (type II), cardiovascular disease (coronary disease, hypertension, etcetera, 5 levels in all), overactive bladder symptom score (OABSS), international prostate symptom score (IPSS) was filled out by the investigator on site. A threshold of two or more times per night was used to define nocturia [1]. Inclusion criteria: Males or females older than 40 years, able to understand and to cooperate. Exclusion criteria: ① Pregnancy; ② Elderly people with poor health conditions, or having difficulty in communication; ③ History of surgery of prostate, urethra or bladder; ④ Suffering from nervous system diseases that might affect urinating; ⑤ History of bladder or prostate tumour and drug administration that might affect urinating; ⑥ Urinary tract infection. Logistic regression analysis was conducted for men and women separately to evaluate which factors were potentially correlated with nocturia and entered into the multivariate model. $P < 0.05$ was considered to be statistical significant.

Results.

A total of 9637 (94.9%) (59.6±9.7 yrs) were qualified to enter the final statistical analysis, consisting of 31.3% male (3012/9637) and 68.7% female (6625/9637). The overall prevalence of nocturia was 31.7% (3053/9637). In multiple backward elimination regression analysis in both sexes, nocturia was significantly associated with cardiovascular disease and OABSS ($P < 0.05$) while sporting activities (very active and moderate) were protective ($P < 0.001$). Age ($P < 0.05$) and DM (498/3012, $P < 0.05$) were correlated significantly with nocturia in men, but not in women (age: $P = 0.34$; DM: 858/6625, $P = 0.82$). There was no significant correlation between nocturia and level of education, present occupation, marital status, tea consumption, BMI, reproductive history or IPSS.

Interpretation of results

In our previous studies, nocturia was shown to be correlated with DM, but in the present study there was no significant association between these factors in elderly women. The reasons of significant effects of cardiovascular disease on sleeping at night are unclear. Sporting activities may cause fatigue to the subjects and make them sleep deeper which can raise the arousal threshold and may increase the bladder capacity during sleep [2]. This may explain why the present study shows that people doing exercise are less likely to have nocturia than other. It has been reported that benign prostate hyperplasia (BPH) shows no significant relationship with nocturia in multivariate analysis by Burgio et al [1] in America. This is in accordance with present study that IPSS showed no relationship with nocturia in Chinese people older than 40 years old.

Concluding message

Nocturia in Chinese people older than 40 years old associated with various conditions. The results of this study revealed that sex-specific models yielded a little difference of correlates of nocturia in men and women. Cardiovascular disease and OABSS were significantly associated with nocturia in both sexes, whereas sporting activities (very active and moderate) were protective. Other conditions including level of education, present occupation, marital status, tea consumption, BMI, reproductive history and IPSS did not correlate with nocturia. The factors, smoking, alcohol consumption, coffee consumption et al, may be related to nocturia which need to be further investigated in the future.

References

1. Burgio KL, Johnson TM 2nd, Goode PS, Markland AD, Richter HE, Roth DL, Sawyer P, Allman RM. Prevalence and correlates of nocturia in community-dwelling older adults. *J Am Geriatr Soc.* 2010;58(5):861-866.
2. Sugaya K, Nishijima S, Owan T, Oda M, Miyazato M, Ogawa Y. Effects of walking exercise on nocturia in the elderly. *Biomed Res.* 2007; 28(2):101-105.

Disclosures

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