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PREVALENCE OF NOCTURIA AND RISK FACTORS FOR FREQUENT NIGHTTIME MICTURITION IN A COMMUNITY-DWELLING JAPANESE ELDERLY POPULATION

Hypothesis / aims of study
Nocturia is a major medical problem that is multifactorial in nature, with characteristics such as an overactive bladder, nocturnal polyuria and sleep disturbance. An individual with nocturia may have to wake one or more times nightly to urinate, and in the elderly population, it is likely that micturition occurs several times nightly. This study was performed to investigate the prevalence of nocturia and to determine the association between the frequency of nighttime micturition and selected concomitant diseases in a community-dwelling Japanese elderly population.

Study design, materials and methods
The Tsurugaya Project was designed as a community-based comprehensive geriatric assessment of elderly Japanese people living in Tsurugaya district, a suburban area of Sendai City in northern Japan, and was performed in July and August 2003. The study evaluated 962 subjects aged 70 years or older living in Tsurugaya; 438 males and 524 females. Trained interviewers performed the study, using the International Prostate Symptom Score and the International Consultation on Incontinence Questionnaire-Short Form, and daytime and nighttime data were collected for urological symptoms. The sex, age, self-reported medical history and habits (smoking and drinking) of the study population were collected, arterial plethysmography* was performed, and individuals were scored on the Mini-Mental State Examination (MMSE) and Geriatric Depression Scale (GDS). The association between nocturia frequency and the backgrounds of the subjects was analyzed using a multivariate logistic model. Statistical significance was considered to be $P<0.05$.
* Arterial plethysmography: This test measures the systolic blood pressure (maximum pressure exerted when the heart contracts) of a lower extremity, as compared to an upper extremity. The test is usually performed to rule out the possibility of arteriosclerosis and blockages in the extremities.

Results
The number of subjects who did not have nocturia was 139 (14.5%), and the distribution is shown in Figure 1. On multivariate analysis, age, sex, high GDS (high possibility of depression), sleep disturbance, asthma, ischemic heart disease and abnormal results in arterial plethysmography were all significant positive risk factors for development of nocturia. Negative risk factors were smoking and high MMSE (low possibility of dementia).

Interpretation of results
I It is known that age and sex are risk factors for nocturia, but in this study two diseases, asthma and ischemic heart disease, were also found to be risk factors. Furthermore, the results of examinations such as GDS, MMSE and arterial plethysmography were found to be related to the frequency of nighttime micturition. Risk factors such as ischemic heart disease and abnormal arterial plethysmography might be associated with polyuria, and sleep disturbance may be a risk factor for nocturia, but may also be a result of nocturia.

Concluding message
This study shows that nocturia and the frequency of nighttime micturition are associated with several diseases, with the results of GDS and MMSE tests and arterial plethysmography, and with smoking. More detailed analysis is needed to further explore these associations.
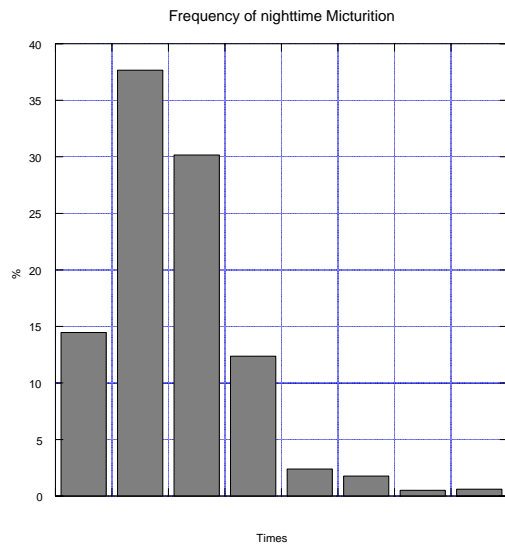
Figure 1: Frequency of nighttime micturition