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RISK FACTORS OF NOCTURIA AND ASSESSMENT OF NOCTURIA-RELATED QUALITY OF LIFE IN JAPANESE POPULATION

Hypothesis / aims of study
Nocturia is one of the lower urinary tract symptoms (LUTS) that seriously affect the quality of life in Japanese population. For assessment nocturia-related quality of life , Nocturia Quality Of Life Questionnaire (N-QOL Questionnaire) was developed, and the Japanese version of N-QOL Questionnaire was very newly translated and validated (1)(2). Our recent study has suggested that nocturia was highly associated with hypertension (HT) than metabolic syndrome (MS) in Japanese population by univariable analysis. Although some trials have focused on nocturia (3), the relationship between nocturia and QOL disorder has not been fully investigated. The main aims of this study were to evaluate nocturia-related QOL by the Japanese version of N-QOL Questionnaire and to evaluate risk factors of nocturia by multivariable analysis.

Study design, materials and methods
Between February 2010 and March 2010, a total of 1,617 participants were assessed in this study at JA Yamanashi Koseiren in Yamanashi Prefecture in Japan. Participants underwent voluntary health care check including all factors associated with the MS and questionnaires of nocturia and LUTS. Nocturia and other LUTS were also assessed by the Japanese version of Nocturia Quality Of Life Questionnaire (N-QOL Questionnaire), International Prostate Symptom Score (IPSS), and Overactive Bladder Symptom Score (OABSS). To estimate the prevalence of the MS, we used diagnostic criteria as defined by The Japanese Society of Internal Medicine, The Japanese Circulation Society, and other 6 Medical Societies in Japan. The primary outcomes were to evaluate QOL by the Japanese version of N-QOL Questionnaire, and association of QOL disorder with life style, disease status (HT, diabetes mellitus (DM), MS, and so on), and other LUTS. In addition, secondary outcomes were association between MS and nocturia. Statistical analysis was made using unpaired t-test, multiple linear regression analysis, multivariable analysis, univariable analysis, and odds ratio and 95% confidence intervals estimated using logistic regression models.
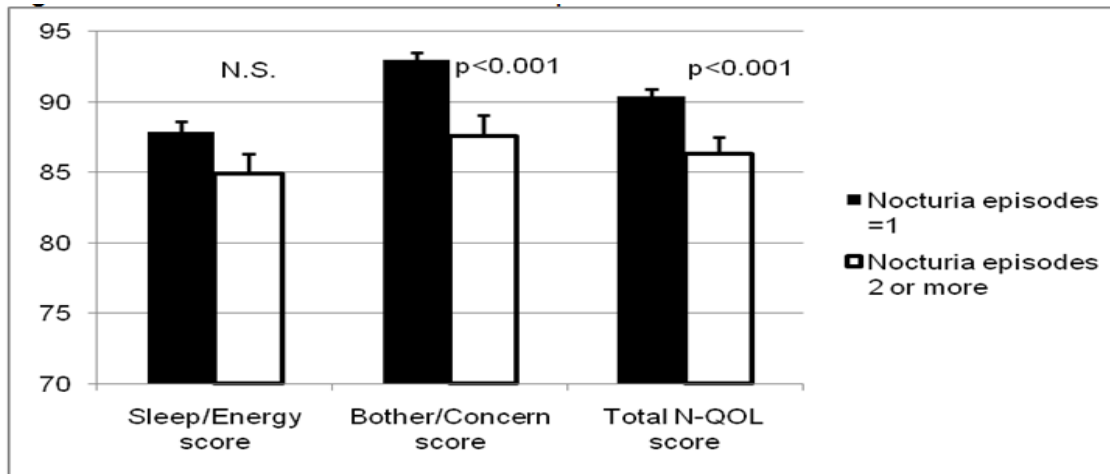
Table 1.Background of the study cohort

Main variables	Sub-variables	Number
Age	20-29 years old	14
	30-39 years old	174
	40-49 years old	318
	50-59 years old	336
	60-69 years old	159
	70-79 years old	48
	80-89 years old	5
	Total	1,054 (mean 50.32 years old)
Sex	Male	554
	Female	500
Nocturia	(+)	432 (40.99%)
	(-)	622
Factors for metabolic syndrome (MS)	Serum lipid(high TG, or low HDL) (+)	289
	High fasting blood glucose (+)	156
	Hypertension (+)	318
	Larger waist conference (+) men	320 (men 260, women 60)
	Defined as MS	119 (11.2%)

Table 2.Correlation among nocturia and MS and other MS-related factors by multivariable analysis

	Odds ratio	95% Confidence interval
High blood pressure	1.63	1.06-2.5
Metabolic syndrome	0.82	0.45-1.49
Waist circumference	0.78	0.49-1.25
Elevated fasting blood sugar	1.09	0.66-1.82
Serum lipid abnormality	0.78	0.49-1.23

Figure 3.Correlation of N-QOL score and episodes of nocturia

Results

Table 1 shows the background of the study cohort. The final study cohort was 1,054 participants who responded completely all questionnaires (554 men and 500 women, aged 23-84; mean: total 50.32, men 50.57, women 50.04 years). Of 1,054 participants, 432 individuals (40.99%) answered at least one episodes of nocturia. Among 432, 323, 82, 17, 10 individuals answered the number of nocturia episodes of 1, 2, 3, and 4 or more, respectively.

Table 2 shows correlation among nocturia and MS and other MS-related factors by multivariable analysis (adjustment for age, sex, and smoking history). Systolic blood pressure (SBP) ≥130mmHg or diastolic blood pressure (DBP) ≥ 85mmHg or medication use for HT (OR=1.63 ; 95%CI: 1.06-2.5), or elevating fast blood sugar were independent risk factors for nocturia., but any of MS, or diabetes, or serum lipid abnormality, or waist circumference was not risk factor.

Figure 3 shows the correlation between nocturia episodes and nocturia-related QOL evaluated by N-QOL questionnaire.

The average N-QOL score (a lower score indicates worse QOL) were 89.39 +/- 10.45, and N-QOL score (90.42 +/- 9.54) in cases with nocturia episodes of only once was significantly higher N-QOL score (86.3 +/-12.33) than in cases with 2 or more nocturia episodes. Any of gender, age, MS, and other MS-related factors did not show any significant correlation with N-QOL score.

The higher nocturia episode are, the lower total N-QOL score, or bother/concern score becomes, however, there was no correlation between nocturia episodes and sleep/energy score.

Interpretation of results

HT and type 2 DM are risk factors for nocturia by multivariable analysis. Although MS and other MS-related factors may correlate with nocturia, none of them showed correlation with N-QOL score. Only the number of nocturia showed significant relationship with N-QOL score on this study.

Concluding message

Among Japanese population, HT is the most possible risk factor for nocturia by either univariable analysis, or multivariable analysis. The number of nocturia is negatively correlated with N-QOL, especially total N-QOL score and bother/concern N-QOL score.

References

1. Urology 63: 481-486, 2004
2. Jpn J Urol Surg 23(6):833-838, 2010
3. J Urol 182(2):616-624, 2009

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Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	The Ethics Committee of JA Yamanashi Koseiren
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes