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Title: THE PREVALENCE AND AETIOLOGY OF NOCTURIA IN KOREA

Aims of Study:

To assess the prevalence and aetiology of nocturia in Korea.

Methods:

A total of 2005 adults (1005 women and 1000 men) in the age group of 40 years or older was surveyed by telephone interview in order to investigate the prevalence of nocturia in Korea. The records of 230 consecutively selected patients (97 women and 133 men) who complained nocturia as part of their symptom complex were reviewed for the aetiology. Evaluation included voiding diary (day, night and 24 hour voided volume) and the AUA symptom score questionnaires. Voiding diary analysis was carried out as previously described by Weiss et al, 1988, determining the nocturnal polyuria index (NPI), nocturia index (Ni) and nocturnal bladder capacity index (NBCi). The aetiology of nocturia was thus classified in the one of the three groups: nocturnal polyuria (NP), nocturnal detrusor overactivity (NDO) and mixed type (NP+NDO); polyuria was classified separately. The statistics were done by the methods of Chi square test, Fisher's exact test and Spearman rank correlation.

Results:

The prevalence of nocturia was 39.2% (> once/week and \geq two micturitions at night) and 27.9% (daily nocturia and \geq two micturitions at night) and increased with age (Table 1). Among the 230 patients with nocturia, 20 (8.7%) had NP, 135 (58.4%) NDO, and 68 (29.4%) had a mixed aetiology for their nocturia (both NP and NDO). Twenty two (8.7%) also had polyuria. There were statistically significant relationship between the result from AUA symptom score question # 7 (severity of nocturia) and the other questions (from question # 1 to # 6). Among them, the correlation coefficients for question # 2 (severity of frequency, $r = 0.421$) and # 6 (severity of strain, $r = 0.420$) in men and question # 2 (severity of frequency, $r = 0.626$) and # 5 (severity of weak stream, $r = 0.453$) in women are high, which may indicate stronger relationships (Table 3). 24 hour voided volume and nocturnal urine volume (NUV) did not change with age but functional bladder capacity (FBC), Ni (NUV/FBC) and predicted number of nightly voids (Ni -1) significantly decreased with age ($p < 0.05$).

Conclusions:

These data showed nocturia is a common symptom with similar prevalence rate in men and women in

Korea. The aetiology of nocturia is multifactorial . Self-reporting of nocturia may thus be reasonably reliable but should be supplemented by use of voiding diary. Nocturnal overproduction of urine is a main cause of nocturia in 38.1% of patients, most of them also have nocturnal detrusor overactivity. The severity of frequency (question # 2) and strain (question # 6) in men and the severity of frequency (question # 2) and weak stream (question # 5) in women may be used as predictive factors of to determine the severity of nocturia. Nocturia was thought to be due to decreased functional bladder capacity and not due to changes in 24 hour and nocturnal urine volume with age.

Table 1 The prevalence of nocturia(daily nocturia and \geq two micturitions at night)in Korea according to age and sex

Age(years)	Men (%)	Women (%)
40-49	23/248 (9.3)	41/254 (16.1)
50-59	61/247 (24.7)	78/252 (31.0)
60-69	88/252 (34.9)	99/246 (40.2)
70-79	125/22 (55.6)	132/232 (56.9)
>80	21/28 (75.0)	13/21 (61.9)
Total	318/1000 (31.8)	363/1005 (36.1)

Table 2. Voiding diary analysis

Aetiology	No (%)	Men (%) (n=133)	Women (%) (n=97)
NP	20 (8.7)	14 (10.5)	6 (6.2)
NDO	135 (58.4)	72 (54.1)	63 (63.9)
Mixed	68 (29.4)	45 (33.8)	23 (23.7)
Np+Mixed	88 (38.1)	59 (67.0)	29 (33.0)
Polyuria	22 (8.7)	18 (12.2)	4 (3.8)

Table 3 The correlation between AUA symptom score question # 7 (severity of nocturia) and the other questions (from question # 1 to # 6) in men and women

AUA symptom score index	Spearman correlation coefficients		p value
	Men(n=133)	Women(n=99)	
# 1 Emptying	r = 0.223	r = 0.245	p<0.01
# 2 Frequency	r = 0.422	r = 0.626	p<0.01
# 3 Intermittent stream	r = 0.367	r = 0.269	p<0.01
# 4 Urgency	r = 0.204	r = 0.280	p<0.01
# 5 Weak stream	r = 0.398	r = 0.453	p<0.01
# 6 Strain	r = 0.420	r = 0.187	p<0.01

References:

Nocturia in adults: etiology and classification. Neurourol & Urodyn 17:467-472, 1988.