

PREDICTIVE FACTORS FOR NOCTURIA

Hypothesis / aims of study

Nocturia in elderly men is a common condition, but is still poorly understood. In literature the 5 main pathophysiological groups of disorders or their combination were defined (Ref. 1). Additionally, recent data contradicts about the prevalence and degree of dependency of each factor in nocturia development. The aims of this study were to analyse predicting factors of nocturia and to define the prevalence of nocturnal micturitions among elderly men visiting their GP

Study design, materials and methods

This is a retrospective study with secondarily derived data. Inclusion criteria were elderly aged men between 55-75 years registered in 21 general practices of Maastricht.

The following data were recorded (presence/absence): cerebrovascular disease (brain/haemorrhage infarct), diabetes mellitus/insipidus (DMI), Parkinson's disease (PD), bladder/prostate cancer, kidney's diseases, urine bladder inflammation, cardiovascular disease (angina pectoris, myocardial infarction), hypertension (HT), congenital diseases (kidney/bladder/prostate), depression, benign prostatic hyperplasia (BPH), general medication treatment and medication treatment of micturitions. To define BPH the International Prostatic Symptom Score Questionnaire (IPSS) was used. BPH was indicated by a score ≥ 9 points on the scale of a weighted addition of item points of the IPSS. Data on urological operations in the past were also included. Moderate alcohol consumption was defined as a having two glasses in a day and assessed by 5 point likert -scale with scores ranging from: 0=never drinking alcohol; 1=1 or 2 days a week; 2=3 or 4 days; 3=5 or 6 days.

For statistical analysis nocturia was defined as having two or more nightly voids. Percentage distributions are given for outcome (nocturia) and each of its potential predictors. A p-value of 0.05 is considered to be statistically significant.

All data-analysis is done by SPSS-pc, version 12.01.

Results

Data on 2934 respondents were used in the final analysis. The prevalence of nocturia (two and more nocturnal voids) was 32,9% (965). The frequency of the number of nocturnal voids was as follows: zero 588 (20,0%), one 1344 (45,8%), two 611 (20,8%), three 208 (7,1%), four 70 (2,4%), five and more 76 (2,6%) and 37 missing. The percentages of males with nocturnal micturitions were similar due in previous studies, except for the group with a one nocturnal void (Ref. 2). This was significant higher in our study

Of the 132 men having had cerebrovascular disease in the past 71 (53,8%) had nocturia. Among respondents with DMI 82 (47.7%) from 172 persons reported nocturia; also 8 (61.5%) from 13 men having PD, 33 (53.2%) from 62 subjects with bladder/prostate cancer and 40 (40.8%) of the 98 males suffering from kidney diseases experienced nocturia.

A multivariate logistic regression analysis shows that nocturia in elderly men is significantly related to bladder/prostate cancer, cerebrovascular disease, medical treatment of micturitions disorders and alcohol consumption (see table 1).

Table 1

Change in -2 LL chi-square, if effect is removed from final model by backward elimination

Effect	Change	df	p-value
Mictur, dis. treatment	7.543	1	0.006
Cerebrovasc. disease	7.722	1	0.005
blad/prostate cancer	8.966	1	0.003
alcohol consumpt.	12.727	4	0.013
cardiovasc. disease*HT	6.049	1	0.014
HT*BPH*DMI	4.192	1	0.041

Interpretation of results

In the finally found regression model there are three direct risk effects and one direct protective effect. Next to these, there is one statistically significant first-order interaction between two factors and one second-order interaction between three factors. The direct effects are (in order of importance): having had bladder/prostate cancer, having had cerebrovascular disease, medical treatment for micturitions disorders and the extent in which alcohol was consumed on a moderate basis (the protective factor). The first-order negative interactive effect concerns cardiovascular disease is HT. If cardiovascular disease was not present, HT was a risk-factor for nocturia, but if it was present, cardiovascular disease replaces the role played by HT, and HT has no effect whatsoever. The second-order positive interaction effect concerns HT, were DMI and BPH. Within patients/respondents suffering from DMI and HT had the corrected OR of BPH on nocturia is 15.35 (95% C.I.: 4.01-58.74, -2LL chi-square =21.16, 1 df, p<0.001).

Concluding message

BPH had a significant relationship with nocturia, especially in combination with DMI and HT. Cardiovascular disease or HT was significant to nocturia mutually replacing each other as a risk factor. Remarkably was the protective effect of moderate alcohol consumption on nocturia, in opposite earlier published data (Ref. 3).

References

1. The standardisation of terminology in nocturia: report from the standardisation subcommittee of the International Continence Society; *BJU International* 2002, **90** (Suppl.3): 11-15.
2. Nocturia in the Dutch adult population. *BJU International* 2002, **90**: 644-648
3. Nocturia in the elderly. *Gerontologist*, 1988, **28**: 99.