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URINE FLOW RATE DECREASE DURING NIGHTTIME?. PRELIMINARY RESULTS USING A PORTABLE UROFLOWMETER

Hypothesis / aims of study

Some nocturnal patients consult urologists with complaining of decreasd urine flow rate during nighttime. There was no report which investigated the difference regarding urine flow rate between during daytime and nighttime in the literature. So we assesed the difference regarding maximum flow rate (Qmax) between during daytime and nighttime using a portable uroflowmeter (Urimetry®, Kansaiseiki Co.Ltd., Higashiosaka, Japan).

Study design, materials and methods

This observational study included 11 males aged >65 who had reported at least 2 nocturnal voids. Uroflow examination was sequentially performed for seven days, like a frequency-volume chart, using a portable uroflowmeter. Qmax (maximum flow rate) A/E ratio was defined as actual Qmax per estimated Qmax which was calculated using voided volume according to the Liverpool Nomogram ($\sqrt{}$Qmax=2.37+0.18x$\sqrt{}$voided volume-0.014xage) [1]. Daytime Qmax A/E ratio and nighttime Qmax A/E ratio were compared for each patient. All patients answered the International Prostate Symptom Score (I-PSS) for lower urinary tract symptoms and the Pittsburgh Sleep Quality Index (PSQI) for sleep status, as routine initial assessment. Mann-Whitney test were used for stastical analysis. $P<0.05$ was considered statistically significant.

Results

A total of 406 (291 daytimes, 115 nighttimes) flow measurements were available for analysis. From analysing total data, nighttime Qmax A/E ratio statiscally decreased compared with daytime Qmax A/E ratio ($p<0.0001$) and volume per void during nighttime statiscally increased ($p<0.0001$). Among six patients, nighttime Qmax A/E ratio statiscally decreased (Table1). Four representative patients data were shown in Figure1.

Among five patients, volume per void during nighttime statiscally increased compared with during daytime (Table1). Regarding lower urinary tract symptoms and sleep status, there were no difference between patients whose nighttime Qmax A/E ratio decreased or not (data not shown).

Interpretation of results

There were some patients whose urine flow rate decreased during nighttime.

Concluding message

Portable uroflowmeter is a very useful instrument for evaluating urine flow rate during nighttime. There were some patients whose urine flow rate decreased during nighttime.

Further investigation are needed to evaluate the effect of decreased urine flow rate during nighttime for status of lower urinary tract symptoms and sleep.

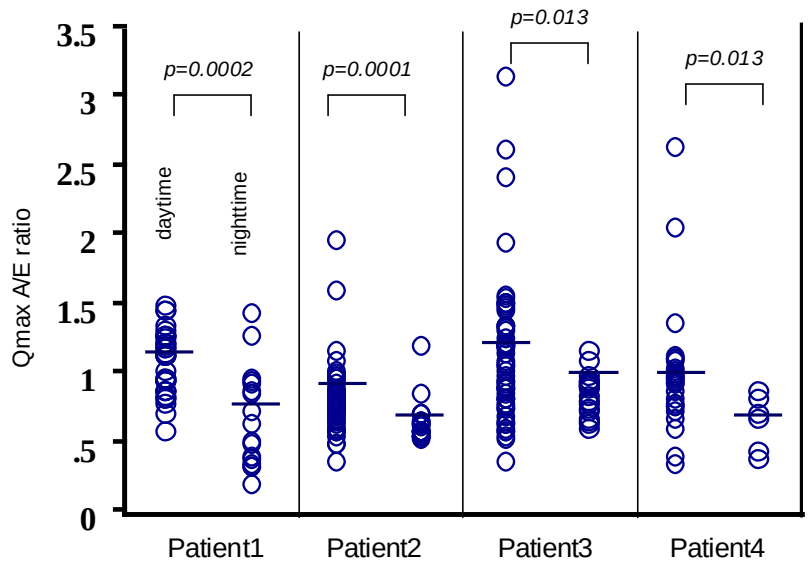
Table1: Qmax A/E ratio and Voided volume

Patient	Qmax A/E ratio daytime (n)	nighttime (n)	*P* ⋆	Voided volume (ml) daytime	nighttime	*P* ⋆
1	1.099 (33)	0.703 (17)	**0.0002**	190.1	315.2	0.0004
2	0.843 (42)	0.663 (23)	**0.0001**	140.4	252.2	<0.0001
3	1.15 (58)	0.872 (20)	**0.013**	188.4	335.3	<0.0001
4	1.02 (27)	0.668 (6)	**0.013**	258.3	259.5	NS
5	0.814 (42)	0.714 (9)	**0.011**	420.9	348.2	NS
6	0.833 (21)	0.604 (2)	**0.049**	420.9	211.0	NS
7	1.015 (10)	0.885 (6)	NS	191.7	335.7	0.0017
8	0.976 (28)	0.972 (20)	NS	261.1	419.0	0.0021
9	1.01 (13)	1.11 (5)	NS	348.9	354.5	NS
10	0.848 (13)	0.803 (4)	NS	388.8	260.9	NS
11	0.705 (4)	0.585 (4)	NS	224.0	224.0	NS
total	0.97(291)	0.791 (115)	**<0.0001**	262.6	318.4	<0.0001

Qmax A/E ratio: actual Qmax/estimated Qmax

⋆ Mann-Whitney test

Figure1. Data for 4 patients. For each patient, daytime data are shown on the left and nighttime data on the right,as indicated for Patient1



References
1. BJU int 1989; 64: 30-38
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Specify source of funding or grant	**None**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
Is this a Randomised Controlled Trial (RCT)?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Ethics Committee of Kyoto University graduate school of medicine**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**