

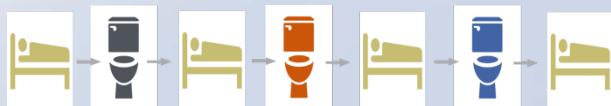
Does successful treatment of Urinary Urgency or Sleep Disordered Breathing improve NOCTURIA and centrally-driven comorbidities?

Chin K¹, Rose GE¹, Ervin CF¹, Ong TJ¹, Whishaw DM¹, Bower WF^{1,2}

1. The Royal Melbourne Hospital; 2. The University of Melbourne

INTRODUCTION

Nocturia is more than an isolated lower urinary tract symptom, being significantly associated with dysfunction of sleep quality and duration, cardiovascular morbidity, mental health and mortality [1]. The medical conditions co-existing with nocturia may share central neural control areas in the brainstem [2,3]. The aim of this study was to investigate whether improvement in one comorbid variable, in patients with nocturia, may regulate other co-morbid dysfunctions toward a more normal state.



METHODS

A prospective, 2-arm repeated measures study was performed in 2017. Participants were recruited from both Continence and Sleep Medicine Services.

Inclusion criteria:

- were ≥40 years of age
- experienced nocturia of ≥1 per night
- reported urinary urgency/urge incontinence (UUI) severe enough to require pharmacotherapy OR sleep disordered breathing (SDB) with an apnoea-hypopnoea index ≥30 and requiring CPAP

Data collected included:

- Demographic information
- Overactive Bladder Symptom Score (OABSS)
- Nocturia-related Quality of Life instrument (NQoL)
- Epworth Sleepiness Scale (ESS)
- Pittsburg Sleep Quality Index (PSQI)
- Hospital Anxiety and Depression Scale (HADS)
- EuroQol Health Questionnaire (EQ-5D-5L)
- 2-day bladder diary
- Actigraphy parameters
- Blood pressure

The study intervention was either an anticholinergic agent or beta-3 agonist to treat urgency/urgency incontinence or CPAP to reduce apnoea episodes. SDB participants were not treated for any urinary tract symptoms; UUI participants did not commence CPAP therapy during the study.

REFERENCES

1. Cornu JN et al. A contemporary assessment of nocturia: definition, epidemiology, pathophysiology, and management – a systematic review and meta-analysis. *Europ Urol* 62 (2012) 877-890.
2. Parthasarathy S et al. Nocturia, sleep-disordered breathing, and cardiovascular morbidity in a community-based cohort. *PLoS One*. 2012;7(2):e30969.
3. Bower WF et al. Nocturia as a marker of poor health: Causal associations to inform care. *Neurourol Urodyn*. 2017 Mar;36(3):697-705.

RESULTS

	Continence (pre → post)	Sig (p)	Sleep (pre → post)	Sig (p)
LUTS				
OAB Symptom Score	8.8 (3.0) - 6.8 (3.1)	0.004	5.5 (3.3) - 4.0 (3.4)	0.009
Nocturia Frequency (from FVC)	2 (1.0-3.0) - 1 (1.0-2.0)*	0.004	1 (1.0-2.4) - 1 (0.4-2.0)*	0.065
Avg Total Nocturnal Urine (mL)	697 (294) - 573 (276)	0.089	716 (271) - 384 (163)	0.002
Average Nocturnal Vol Voided (mL)	237 (103) - 273 (129)	0.087	287 (112) - 266 (165)	0.641
Nocturnal Polyuria Index (%)	38.6 (13.0) - 36.3 (14.9)	0.628	41.1 (16.2) - 30.4 (15.9)	0.058
WELLBEING				
Nocturia QoL Score	19.2 (10.7) - 15.4 (9.4)	0.120	21.5 (12.4) - 11.9 (11.0)	0.007
HADS Anxiety Score	5 (3-10) - 3 (1-10)*	0.294	7 (2-9) - 6 (1-9)*	0.929
HADS Depression Score	4 (1-9) - 4 (2-7)*	0.428	5 (2-7) - 6 (1-9)*	0.858
CARDIOVASCULAR				
Systolic BP (mmHg) <i>All patients</i>	129 (25) - 130 (17)	0.888	137 (13) - 143 (14)	0.069
Systolic BP (mmHg) <i>Baseline >140</i>	167 (17) - 140 (8)	0.035	150(5) - 156(8)	0.318
Diastolic BP (mmHg) <i>All patients</i>	65 (59-75) - 74 (63-80)*	0.069	85(76-88) - 87 (81-97)*	0.051
SLEEP				
First Uninterrupt. Sleep Time	3 (1.2) - 4 (1.6)	0.005	2.8 (1.6) - 3.9 (2.4)	0.061
Sleep Latency (mins) <i>All patients</i>	1 (1.0-3.0) - 1 (0.0-2.0)*	0.115	1 (0.3-2.0) - 1 (0.0-2.0)*	0.527
Sleep Latency (mins) <i>1<30, 2 is 30-60; 3 is >60</i>	3 (2.0-3.0) - 2 (1.0-2.8)*	0.034	2 (2.0-3.0) - 2 (1.5-2.5)*	0.157
PSQI Global Score	8.6 (4.2) - 6.7 (3.0)	0.027	8.7 (4.0) - 6.8 (4.7)	0.036
PSQI Habitual Sleep Efficiency (%)	87.3 (13.5) - 94.6 (3.2)	0.454	82.5(7.9) - 91.6(3.1)	<0.001
PSQI Daytime Function	1 (1.0-2.0) - 1 (1.0-2.0)*	1.000	1 (1.0-2.0) - 1 (0.0-1.0)*	0.034

NOTE: results are presented as mean (SD); otherwise as * median (IQR). LUTS = Lower Urinary Tract Symptoms; BP = Blood pressure.

CONCLUSIONS

In a sample of relatively healthy individuals, treatment targeted to the presenting dysfunction resulted in less nocturia, improved sleep quality and longer duration of undisturbed sleep. This early work appears to suggest that in both groups treatment may induce change toward a more normal state in selected variables known to have control areas in the brainstem.