



Sleep Disorders in Patients with Postural Tachycardia Syndrome

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Background

- Postural tachycardia syndrome (POTS) is a heterogeneous disorder characterized by an exaggerated increase in standing heart rate accompanied by symptoms of orthostatic intolerance.
- Patients with POTS typically report significant fatigue, daytime sleepiness, and diminished quality of life.
- In this study we aimed to characterize the sleep patterns in these patients using both subjective and objective measures.

Objective

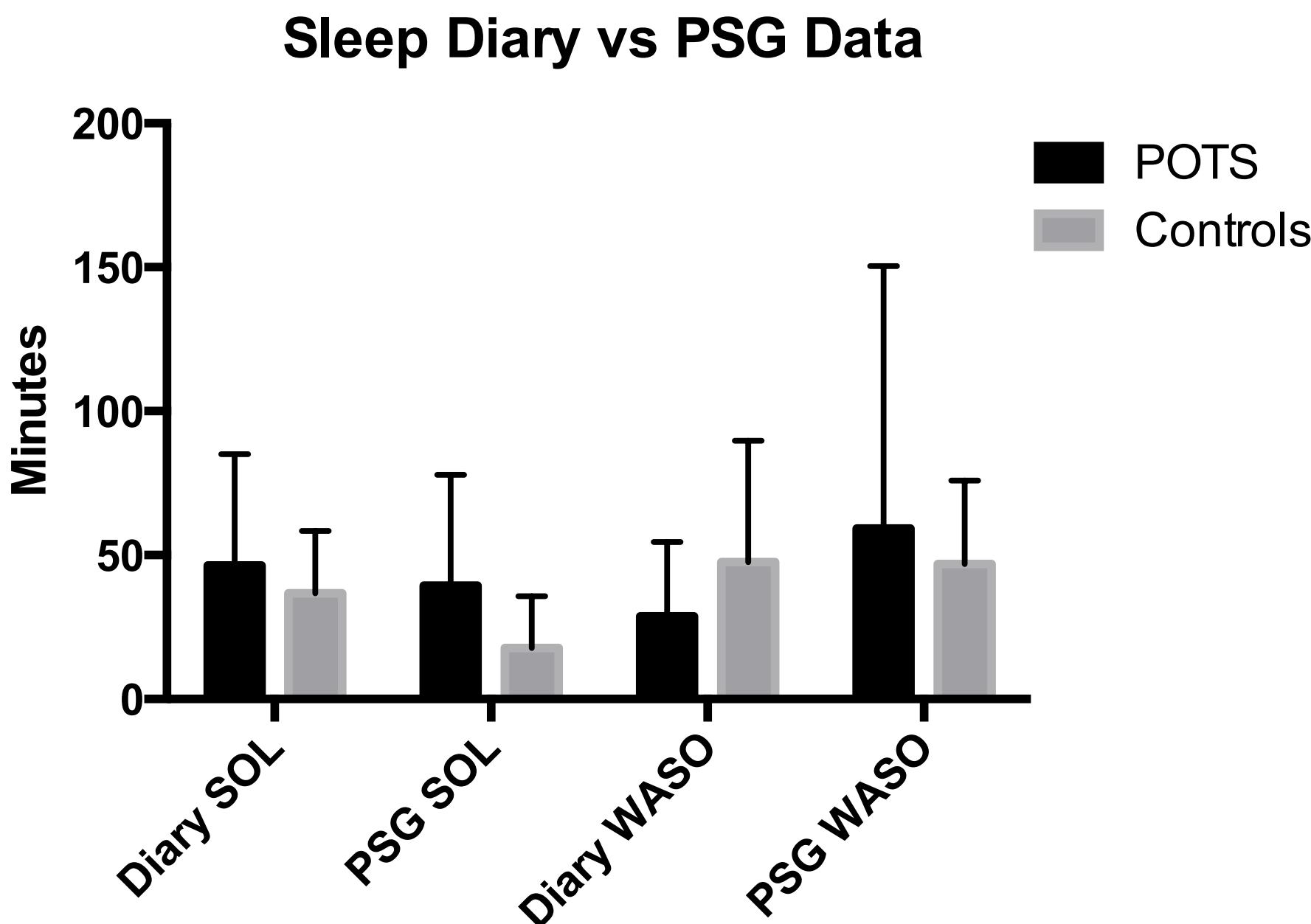
To define sleep patterns in patients with POTS and their relation to symptoms of fatigue and excessive daytime sleepiness.

Subjects & Methods

- Patients were diagnosed with POTS (n = 17) based on autonomic testing and clinical evaluation at our center.
- Age and gender matched control subjects (n = 10) were selected from patients presenting to the sleep clinic for any sleep-related complaint.
- All patients completed the following questionnaires:
 - The **Epworth Sleepiness Scale** (ESS) to assess sleepiness.
 - The **Fatigue Severity Scale** (FSS) to assess fatigue.
 - The **Beck Depression Index** (BDI) to assess comorbid depression.
- Horne-Ostberg morningness-eveningness questionnaire (MEQ) to assess circadian chronotype.
- Sleep diaries over the course of two weeks to assess sleep onset latency (SOL), wake after sleep onset (WASO), and sleep efficiency (SE).
- Results were compared using 2-tailed T-test analysis. A p value of < 0.05 was deemed statistically significant.

Results

- POTS patients and control subjects were of similar age (29 ± 8 POTS vs. 29 ± 5 control).
- The majority of subjects in both groups were female (72% POTS vs. 70% control).
- Compared with controls, patients with POTS scored significantly higher on the FSS (52±11 vs. 42±10, p = 0.02).
- There was no significant difference in subjective sleepiness as determined by ESS scores.
- There was no significant difference in depression scores or MEQ chronotype scores.
- POTS patients exhibited more rapid heart rates during both REM and NREM sleep.
- Objective SOL was higher in POTS patients, however these values did not reach statistical significance.
- There was no difference between subjective and objective SOL, WASO and SE.



Results

	POTS	Controls	P value
AHI	7.4 ± 4	15 ± 12	0.21
Min O2	91 ± 4	92 ± 2	0.81
PMLi	0.74 ± 1	10 ± 15	0.02*
SOL	39 ± 38	18 ± 18	0.11
WASO	59 ± 91	46 ± 29	0.68
SE	82 ± 12	86 ± 8	0.46
# awakenings	23 ± 12	24 ± 8	0.90
# stage shifts	125 ± 78	144 ± 66	0.54
% N1	9 ± 6	11 ± 9	0.44
% N2	56 ± 10	69 ± 10	0.35
% N3	17 ± 12	24 ± 8	0.45
% REM	17 ± 5	24 ± 8	0.06
Mean, Max HR NREM	69, 93	57, 84	0.03*
Mean, Max HR REM	71, 90	58, 77	0.004*

Polysomnography data.

	POTS	Controls	p value
SOL (min)	46 ± 39	37 ± 22	0.51
WASO (min)	29 ± 26	48 ± 42	0.27
Sleep Efficiency (%)	87 ± 6	93 ± 86	0.89
MEQ Score	46 ± 17	48 ± 30	0.39

Sleep diaries and MEQ results.

	Age	BMI	ESS	FSS	Beck
POTS (n = 17)	29±8	22±4	8±5	52±11	10±4
Control (n = 10)	28±5	24±4	5±4	42±10	12±8
		p = 0.62	p = 0.08	p = 0.02*	p = 0.23

Patient demographics.

Conclusions

- Patients with POTS reported greater subjective daytime fatigue, however there was no difference in sleepiness scores when compared to controls.
- POTS patients exhibited less severe sleep disordered breathing and periodic leg movements.
- POTS patients reported a neutral (neither morning nor evening) chronotype.
- With the exception of a trend towards less REM sleep and increased heart rates during sleep, there was no difference in polysomnography between POTS patients and controls.

References

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