

SLEEP/WAKE PATTERNS VIA 42-CONSECUTIVE HOUR AMBULATORY POLYSOMNOGRAPHY IN HEMODIALYSIS AND ADVANCED CANCER PATIENTS

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Purpose: Sleep complaints and daytime sleepiness are common in patients with chronic illness. According to the Two-Process Model of Sleep Regulation, irregular nocturnal and daytime sleep interact to disrupt the normal control of the sleep/wake cycle. The purpose of this study was to describe and compare the sleep/wake patterns of two groups of patients characterized by very prevalent sleep/wake complaints.

Methods: The sample included 31 subjects with metastatic solid tumors stages III and IV cancer (CA) and 31 chronic hemodialysis (HD) patients who were free of other chronic conditions (see table below). All underwent continuous ambulatory polysomnography (PSG) in their home environments for one 42-hour period beginning at 6 PM on Day 1 and continuing through 12 PM on Day 2. For HD subjects, this included a night both before and after treatment. The major nocturnal sleep parameters obtained included total sleep time (minutes), sleep efficiency (time asleep/time in bed X 100, %), and sleep latency (minutes). Total daytime sleep (minutes) was also measured. Descriptive statistics were used to summarize sleep parameters; groups were compared on these variables using an unpaired two-tailed t-test [$\alpha = 0.0125$; Bonferroni correction for multiple (4) comparisons]. A relationship among nocturnal and daytime sleep was explored using the Spearman rho (r_s) correlation procedure.

Findings: The CA group was significantly older ($t = 2.3$, $df = 60$, $p = 0.027$), but the groups were not different with regard to gender (Chi-square analysis). The mean \pm standard deviation for the sleep parameters measured by group are reported below.

Demographic/Sleep Variables	Cancer Group	Hemodialysis Group
Age (years)	56.7 (8.3)	51.1 (11.0)
Gender (male/female)	18/13	16/15
Total nocturnal sleep time (min)	407.7 (77.7)	332.5 (71.0)
Nocturnal sleep efficiency (%)	78.5 (10.3)	72.7 (10.3)
Nocturnal sleep latency (min)	24.4 (36.0)	34.8 (29.8)
Daytime sleep (min)	92.6 (115.5)	67.2 (60.4)

The HD group, but not the CA group, had reduced nocturnal total sleep time in comparison to normative data for age, a group difference that was also statistically significant ($t = 40$, $df = 60$, $p < 0.000$). Although not statistically significant, the HD group had a lower nocturnal sleep efficiency, took longer to fall asleep, and had less daytime sleep than the CA group. Daytime and nocturnal total sleep time were negatively correlated in HD subjects ($r_s = -0.344$, $p = 0.029$), but not CA subjects.

Discussion: These results suggest that HD and CA patients have disrupted sleep/wake patterns that are characterized by different features. The development of population specific interventions designed to stabilize the sleep/wake patterns of these patients is warranted.

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