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0628

EPILEPSY CONTROL AND NIGHT SLEEP DURATION AND AFTERNOON SIESTA

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Introduction: The relationship between sleep and epilepsy has long been recognized but understanding the association between seizure control and sleep duration is not well explored. The study aims to describe the sleep habits in people with epilepsy (PwE) and explore the association between sleep habits, particularly afternoon napping and level of seizure control and anti-epileptic drugs (AEDs).
Methods: this is a cross-sectional study of adult epilepsy patients attending neurology clinic. Sleep parameters are measured using actigraphy for one week and home sleep apnea testing to rule out obstructive sleep apnea (OSA).
Results: total of 250 PwE were screened and 129 patients (male & female) completed the study with mean age of 29.75 ± 9.18 years and mean body mass index (BMI) of 27.12 kg/m2. There was significant association between night sleep duration and time of wake up and number of AEDs (adjusted R2=0.026, P=0.03 & P=0.04 respectively). There is also significant association between number of seizures per night and afternoon napping (adjusted R2=0.043, P=0.05). Other sleep parameters did not reveal any significant association with level of epilepsy control neither with number of AEDs (P>0.05).
Conclusion: The study described that PwE with uncontrolled epilepsy on multiple AEDs are practicing sleep habits that involved longer afternoon napping and shorter sleep duration.
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METABOLIC SYNDROME IN NARCOLEPTIC CHILDREN

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Introduction: Narcolepsy is a disabling neurological disorder characterized primarily by excessive daytime sleepiness (EDS), cataplexy, hypnagogic hallucinations, sleep paralysis, rapid eye movement (REM) behavior disorder (RBD) and disturbed nocturnal sleep. Over 50% of children with narcolepsy are obese. Metabolic syndrome (MetS), a constellation of disturbances associated with obesity, is increasingly seen in narcolepsy. A higher prevalence of MetS was revealed both in adults and children with narcolepsy. The objective of the present study was to compare clinical and sleep characteristics in children with narcolepsy with different components of MetS to clarify the mechanisms in MetS in these children.
Methods: This retrospective study included 58 children with narcolepsy. Data on blood pressure, High density lipoprotein (HDL) cholesterol, triglyceride, glucose, insulin and anthropometry (height and weight) were collected. MetS was defined when ≥3 of the following criteria were met: (1) Body mass index (BMI) ≥IOTF-30, (2) Blood pressure ≥90th percentile, (3) HDL-C ≤0.4 g/L, (4) Triglycerides ≥1.3 g/L, (5) homeostasis model assessment of insulin resistance (HOMA-IR) ≥75th percentile. Then, clinical and sleep characteristics were compared in groups with different MetS components.
Results: A total of 17 % of children with narcolepsy had MetS including 79% with high HOMA, 26% with high BMI, 24% with low HDL cholesterol and 12% with high triglycerides, but no patient with high blood pressure. 58% of the patients without obesity had at least 1, 2 or ≥3 MetS risk factors (78%, 15% and 6%, respectively). 55% of them were overweight. In children with narcolepsy with at least two MetS risk factors, there was a higher proportion of night eating, a lower percentage of N3 sleep, a higher arousal index, a shorter mean sleep latency and more sleep onset REM periods (SOREMPs) compared to patients with fewer MetS risk factors.
Conclusion: Altered sleep architecture and eating behavior are closely associated with risk factors of MetS in children with narcolepsy, even without obesity. We recommend to evaluate MetS risk in all children with narcolepsy to prevent complications such as type 2 diabetes and cardiovascular outcomes.
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0630

A 4-WEEK SLEEP INTERVENTION THAT ADVANCES AND STABILIZES SLEEP TIMING LEADS TO MEANINGFUL IMPROVEMENTS IN PAIN AND PHYSICAL FUNCTION IN PEOPLE WITH FIBROMYALGIA

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Introduction: Fibromyalgia is characterized by chronic widespread pain, mood and sleep disturbance, and affects over 20 million Americans. Pharmacological treatments (antidepressants, antiepileptics, opioids) often have small treatment effects and adverse side-effects. Exercise therapy requires significant patient motivation, and psychotherapy requires specialized personnel. Here we report on a randomized clinical trial in which we tested a 4-week sleep-wake scheduling intervention with either a dim or bright daily 1 hour morning light treatment.
Methods: Fifty-four adults (52 females, 18-78 years) meeting ACR 2011 diagnostic criteria for fibromyalgia completed a 5-week protocol. In the first week each participant slept at home, ad lib, on their usual sleep schedule. Thereafter, they followed a fixed sleep schedule and a daily 1-hour morning light treatment (randomized to dim or bright light). The sleep schedule advanced each participant's individual sleep-wake timing by no more than 1 hour, and focused on stabilizing sleep timing. Participants were monitored with wrist actigraphy throughout the study. Outcomes were assessed at baseline, 2 weeks and 4 weeks after the intervention.
Results: The 4-week intervention resulted in an average 36-minute advance in participants' sleep timing in both groups (ps<0.001). Night-to-night variability in sleep timing also significantly decreased in both groups (ps<0.01). Pain and physical function improved equally in both groups (Fibromyalgia Impact Questionnaire-Revised, PROMIS Pain intensity, PROMIS

Physical Function, ps<0.01). Across both groups, a greater shift in morningness (Owl-Lark score) was associated with a greater reduction in depressive symptoms (PHQ-9; r=-0.45, p<0.001). No significant side effects were reported in either group. Treatment expectations were not significantly correlated with symptom improvement (all rs nonsignificant).
Conclusion: Results suggest that 4 weeks of an advanced and stabilized sleep schedule can lead to meaningful improvements in pain and physical function in people with fibromyalgia. The addition of a bright vs. dim morning light treatment did not further increase symptom improvement. A reduction in depressive symptoms during the intervention may have contributed to the improvements in pain and physical function. Sleep-wake scheduling should be further explored as a potentially feasible, acceptable and effective adjunctive non-pharmacological treatment for fibromyalgia.
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0631

ACTIGRAPHY-BASED AND SELF-REPORTED SLEEP QUALITY AND COGNITIVE FUNCTION IN MIDLIFE

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Introduction: Growing evidence suggests that sleep disturbance might be a risk factor for cognitive impairment in older adults. However, the association between device-based sleep duration, quality and cognitive function in midlife is poorly understood.
Methods: We examined 526 Black and White men and women who completed the sleep examination at baseline from 2003 to 2005 and had cognition evaluated 11 years later from the Coronary Artery Risk Development in Young Adults (CARDIA) study, Sleep duration and quality was assessed objectively using a wrist activity monitor and subjectively by Pittsburgh Sleep Quality Index (PSQI). We evaluated cognitive function using the Digit Symbol Substitution Test (DSST), Stroop test, Rey Auditory Verbal Learning Test (RAVLT), Montreal Cognitive Assessment (MoCA) and Letter Fluency and Category Fluency tests.
Results: This study included 305 (58%) women and 229 (44%) Black people, with a mean age of 40.1±3.6 years at baseline. After adjustment for age, sex, race, education, smoking, body mass index, depression, physical activity, hypertension and diabetes, actigraphy-measured sleep fragmentation index (calculated as the sum of the percentage of time spent moving and the percentage of immobile periods ≤ 1 minute) was significantly associated with all measures of cognition, except for fluency. Every standard deviation increase in sleep fragmentation index was associated with worse executive function [DSST (b=-1.80, 95%CI: -3.20, -0.41) and Stroop (b=-1.23, -0.25, -2.21)], worse verbal learning [RAVLT (b=-0.41, 95%CI: -0.66, -0.82)] and worse global cognition [MOCA (b=-0.41, 95%CI: -0.74, -0.16)]. Poorer sleep maintenance was associated with worse verbal learning (RAVLT) and global cognition (MOCA) of a similar magnitude. We did not find any association between objective sleep duration or subjective sleep quality and cognition.
Conclusion: Poorer actigraphy-measured sleep quality rather than sleep duration was associated with worse executive function, verbal learning and global cognition among middle-aged Black and White men and women. Sleep quality is important for cognitive health in midlife.
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0632

EARLY SLEEP-DISORDERED BREATHING IN MODERATE-TO-SEVERE TRAUMATIC BRAIN INJURY (TBI) IS LINKED WITH CHRONIC PAIN STATUS AT LONG-TERM FOLLOW-UP: A TBI MODEL SYSTEMS STUDY.

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Introduction: Sleep disorders and chronic pain (pain of >3 months duration) are common after traumatic brain injury (TBI). A recently completed multi-center trial found that two-thirds of adults with moderate-to-severe TBI had sleep apnea diagnosed during polysomnography (PSG) completed during inpatient rehabilitation. Although a bidirectional relationship between sleep and pain exists, attention to sleep apnea as a specific diagnosis and its possible role in chronic pain following TBI has not been explored. We hypothesized that PSG-derived respiratory indices shortly following TBI would be worse among those reporting chronic pain at 1- to 2-year follow-up compared to those without chronic pain.
Methods: Sample (N=66) derived from overlapping cohorts across two separate multicenter studies. Participants with moderate to severe TBI underwent PSG during inpatient rehabilitation and completed a telephone follow-up interview to assess chronic pain status using standardized measures at 1-2 years post-TBI (610-day average). Pairwise comparisons across participants with and without chronic pain were made to determine the magnitude of clinically significant differences on respiratory indices including oxygen desaturation, central and obstructive apneas, and total apnea-hypopnea index (AHI).
Results: Presence of chronic pain at follow-up was associated with elevated central apnea events (2.6) and oxygen desaturation (19.6) relative to those without chronic pain (0.8 and 7.9, respectively). Important differences were also seen between obstructive and total apnea hypopnea index (AHI) using Centers for Medicaid and Medicare Services scoring criteria, with those in the chronic pain cohort being 6.5 and 8.7 points higher than their non-pain counterparts, respectively. Group differences on obstructive and total AHI were considered minor when using the American Academy of Sleep Medicine scoring criteria, although those with current pain experienced categorically worse sleep apnea (total AHI = 19 versus 12.4).
Conclusion: This is the first study to find an association between PSG-derived respiratory indices and long-term chronic pain status following moderate-to-severe TBI. Sleep apnea represents an important modifiable factor following injury that may contribute to long-term pain-related outcomes. Given the prominence of chronic pain several years post injury, future studies should investigate the role of sleep apnea and early intervention among those following moderate-to-severe TBI to determine impact on long-term rehabilitation and pain outcomes.