Conclusion: The SET study demonstrated that tasimelteon treatment entrains the circadian pacemaker in blind patients with Non-24. Entrained patients no longer cycled in- and out-of-phase; consequently their sleep-wake schedule was stabilized. This exploratory analysis suggests that tasimelteon decreased the cyclical variability of both nighttime and daytime sleep in patients with Non-24.
Support (If Any): Vanda Pharmaceuticals Inc. (ClinicalTrials.gov NCT01163032).

0484

CORTISOL AND DIM LIGHT MELATONIN ONSET TIMING IN ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

Goldman SE[1], Burgess HJ[2], Corbett BA[3], Laudenslager ML[4], Wofford D[1], Fawkes DB[1], Wyatt A[1], Malow BA[1]
[1]Vanderbilt Kennedy Center, Vanderbilt University Medical Center, Nashville, TN, USA, [2]Rush University Medical Center, Chicago, IL, USA, [3]Vanderbilt University Department of Psychiatry and Psychology, Nashville, TN, USA, [4]University of Colorado-Denver, Aurora, CO, USA

Introduction: Individuals with autism spectrum disorder (ASD) display high levels of anxiety and stress, exhibit a high prevalence of sleep disorders, and show disturbances in the HPA axis. Alterations in the timing of melatonin synthesis and/or melatonin metabolism have been suggested in ASD suggesting a possible circadian contribution. We hypothesized an association between cortisol and the dim light melatonin onset (DLMO).
Methods: Saliva samples were collected at home in dim light every 30 minutes from 6:30 pm until natural bedtime for up to 5 nights (Thursday-Sunday) and assayed for melatonin from 9 adolescents with ASD ages 13-20 years. Cortisol samples were obtained from salivary samples collected immediately prior to bedtime and upon waking on Friday and Saturday. Participants wore an actigraph, to measure daytime and nighttime activity for 28 days. Cortisol samples were averaged for each individual. Associations were examined using Spearman correlations.
Results: Later DLMO was associated with higher evening cortisol levels ($rs = 0.7$, $p = 0.05$) and marginally associated with higher morning cortisol levels ($rs = 0.6$, $p = 0.07$). Sleep fragmentation was associated with higher evening cortisol ($rs = 0.8$, $p = 0.01$) and higher evening-morning cortisol ratio ($rs = 0.7$ $p = 0.03$).
Conclusion: The association of higher evening cortisol levels with later DLMOs suggests a possible HPA axis dysfunction in adolescents with ASD, as well as an aspect of circadian timing. Individuals with more daytime stressors may exhibit a diminished reduction in the fall of cortisol in the evening associated with insomnia. This finding will be expanded in additional work.
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0485

THE PREVALENCE AND IMPACT OF SLEEP DISORDERS IN COLLEGE STUDENTS

Thomas SJ, Lichstein KL
University of Alabama, Tuscaloosa, AL, USA

Introduction: Sleep complaints among college students have been found to be prevalent and are associated with a variety of negative outcomes. However, previous research in this population has relied on self-report questionnaires to determine the prevalence of sleep disorders. The purpose of this study was to use a brief clinical interview to more accurately determine the diagnostic prevalence and associated outcomes of sleep disorders in this population.
Methods: College students ($n = 277$) were recruited from a university research subject pool and completed a battery of eight self-report questionnaires assessing sleep, physical/mental health, and academic performance. Students ($n = 153$) who reported sleep complaints then completed a 15-20 minute clinical interview over the telephone to determine clinical diagnoses based on ICSD-2 diagnostic criteria.
Results: In this sample, 74.6% of students indicated some type of frequent and severe sleep complaint by self-report questionnaire. However, only 27.8% of the sample met diagnostic criteria for a sleep disorder. Delayed Sleep Phase Disorder (12.3%) and Behaviorally Induced Insufficient Sleep Syndrome (8.3%) were the two most prevalent sleep disorders, followed by insomnia (5.1%), RLS (1%), and idiopathic hypersomnolence (1%). Students with a sleep disorder reported more mental and physical health complaints ($p < .001$), missed more class due to illness ($p < .01$), but did not report a lower GPA ($p = ns$).
Conclusion: These results suggest that sleep complaints are prevalent among college students. The overall prevalence of sleep disorders is comparable to what has been found in adults, yet the prevalence of specific diagnoses differs. Additionally, the presence of a sleep disorder is associated with negative outcomes. Longitudinal analyses may be helpful in further examining outcomes associated with sleep complaints. These findings suggest that sleep complaints should be evaluated in this population and underscore the importance of a clinical interview in the diagnostic process.
Support (If Any): UA Department of Psychology.

0486

OCCUPATIONAL AND NEUROPHYSIOLOGICAL DEFICITS IN SHIFT WORK DISORDER RELATE TO INSOMNIA, NOT SLEEPINESS

Belcher R, Roth T, Gumenyuk V, Mengel HJ, Philport J, Drake CL
Sleep Disorders and Research Center, Henry Ford Hospital, Detroit, MI, USA

Introduction: We examine whether insomnia and excessive sleepiness, the two diagnostic symptoms of Shift Work Disorder (SWD), are differently related to evoked responses and work impairment.
Methods: 34 night workers participated in an overnight MSLT and evoked potential assessment. Subjects had no sleep disorders prior to starting night work. At 17:00, each subject completed an Endicott Work Productivity Scale (EWPS), two Insomnia Severity Indices (ISI-Day, ISI-Night), and an Epworth Sleepiness Scale (ESS). Subjects with ISI-Day ≥ 10 and ESS < 10 were classified "alert insomniacs" (AI, $n = 12$). Subjects with ISI-Day ≥ 10 and ESS ≥ 10 were classified "sleepy insomniacs" (SI, $n = 11$). Subjects reporting < 10 on both scales were classified controls ($n = 11$). At 18:00, subjects completed a test of attention to novelty and associated ERPs.
Results: Neither the MSLT nor the ESS correlated with EWPS scores or ERP amplitudes ($p > .10$). However, the mean of the ISI measures correlated with the EWPS ($r = .409$, $p < .01$) and the attention-to-novelty P3a ($r = -.410$, $p < .01$). The AI group was most impaired on the EWPS, significantly more impaired than controls (25.8 ± 14.8 vs. 12.3 ± 9.4, $p < .05$). SI were not statistically different from controls (19.5 ± 8.7 vs. 12.3 ± 9.4, $p > .05$). Interestingly, the fatigue subscale of the EWPS was significantly higher in AI than in controls (6.3 ± 3.1 vs. 3.4 ± 2.5, $p < .05$), while there was no significant difference between SI and controls (4.8 ± 1.7 vs. 3.4 ± 3.1, $p > .10$). Compared to controls, AI showed significantly attenuated P3a responses (Fcz, Czp, Cpz, MD 1.62-1.77, $p < .05$) and target-detection P3b responses (Fcz, Czp, Cpz, MD 1.28-1.64, $p < .05$).

P3b in SI was not different from controls ($p > .10$) and P3a was only different at one electrode (Cpz, MD 1.43, $p < .01$).
Conclusion: Insomnia is linked to functional and cognitive impairments in shift workers. Insomniacs with normal sleepiness showed more severe impairments than insomniacs who reported excessive sleepiness.
Support (If Any): This study is supported by grant 1K01OH009996-03 from CDC/NIOSH.

0487

ATTENTIONAL BRAIN RESPONSES IN NIGHT SHIFT WORKERS ARE SENSITIVE TO OCCUPATIONAL IMPAIRMENT

Gumenyuk V, Belcher R, Roth T, Bazan L, Larose C, Drake CL
Sleep Disorders and Research Center, Henry Ford Hospital, Detroit, MI, USA

Introduction: The Endicott Work Productivity Scale (EWPS) is a self-report assessment of occupational functioning. We correlated global and subscale EWPS scores to evoked response potentials (ERPs), objective measures of cognitive function, in a sample of shift workers.
Methods: 34 night workers participated in an overnight neurophysiology (e.g., ERP) assessment. Subjects with a history of insomnia or other sleep disorders prior to shift work were excluded. At 17:00, each subject completed an Endicott Work Productivity Scale (EWPS). At 18:00, each participant performed an "active" attention ERP task. Mean electrical amplitudes corresponding to attentional orienting (P3a) and target detection (P3b) were calculated and compared across all participants.
Results: Total EWPS scores were correlated with the P3a, an attention-to-novelty response (Cpz, $r = -.344$, $p < .05$). The fatigue subscale (items such as losing interest, becoming reckless, and falling asleep at work) was correlated to the P3a response (Cpz, $r = -.523$; Pz, $r = -.511$, $p < .01$), as was the executive function subscale (difficulty concentrating, organizing work, and forgetting information; Czp, $r = -.343$, $p < .05$). Three subscales measuring interpersonal interactions, work efficiency, and counterproductive work behavior did not significantly relate to ERP amplitudes. None of the EWPS scores related to P3b (target detection) amplitudes.
Conclusion: ERP measures of attentional orienting were related to several components of self-reported occupational performance in a sample of night shift workers. Specifically, the P3a, a measure of frontal attention orienting, was highly sensitive to scale items assessing executive function. We found no evidence for a relationship between work functions and the parietal P3b response associated with target detection and memory update processes, supporting the notion that impairments seen in Shift Work Disorder are largely distributed over the frontal lobe.
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