

Sleep Patterns in Male Children with Attention-Deficit Hyperactivity Disorder by Actigraphy

Na-Young Kim, MD, Jong-Hyun Jeong, MD, PhD, Hyun-Kook Lim, MD, PhD, Ho-Jun Seo, MD, PhD and Seung-Chul Hong, MD, PhD

Department of Psychiatry, College of Medicine, The Catholic University of Korea, St. Vincent's Hospital, Suwon, Korea

Korean J Psychopharmacol 2012;23:107-114

Objective: Attention-deficit hyperactivity disorder (ADHD), the most common behavior disorder of childhood, is characterized by a pattern of diminished sustained attention and higher level of impulsivity. About 25-50% of ADHD patients were reported to have sleep problems including higher level of nocturnal activity, longer sleep latency, lower sleep efficiency, more frequent night awakenings and shorter total sleep time. However, there is a lack of consistent results of any significant sleep problems but higher number of sleep movement and night-to-night variability from objective data although the self- or parental reports have suggested higher rates of sleep problems. This study was to ascertain the nocturnal sleep disturbances in patients with ADHD by objective measure, actigraphy.

Methods: The subjects were 24 male patients with ADHD and 12 control children (6-12 years). We tested them by neurocognitive function test and applied actigraphy to get sleep variables and to compare sleep disturbances for 72 hours.

Results: 1) In Matching Familiar Figures Test, the patients with ADHD manifested significantly increased response error (58.71 ± 28.16 percentile vs. 35.20 ± 26.49 percentile, $p=0.038$) and response latency (69.71 ± 23.57 percentile vs. 49.70 ± 24.58 percentile, $p=0.042$) compared with control children. Also, the patients with ADHD required more time for Trail Making Test B than controls and the difference were statistically significant (164.2 ± 90.88 sec. vs. 79.0 ± 55.08 sec., $p=0.043$). 2) In sleep variables by actigraphy, the sleep latency (21.57 ± 24.28 min. vs. 5.81 ± 4.69 min., $p=0.005$), wake after sleep onset (WASO) (62.01 ± 18.56 min. vs. 47.00 ± 15.08 min., $p=0.039$) and fragmentation index ($17.28 \pm 5.41\%$ vs. $12.45 \pm 4.88\%$, $p=0.048$) were significantly increased in patients with ADHD compared with controls. There were no significant differences in total sleep time and sleep efficiency.

Conclusion: The patients with ADHD had more sleep problems and results of this study suggested that they have significantly increased sleep latency, WASO and fragmentation index compared with controls. However, further studies improved by large sample sizes, addition of polysomnography and ADHD subtypes should repeatedly suggest consistent results about sleep problems in children with ADHD.