Nocturnal Activity and Sleep in ADHD Children With and Without Mood Disorders.

Carol A. Glod (1,2,3), Martin H. Teicher(1,2), Carl M. Anderson(1,2), Ann Polcari(2), Cynthia McGreenery(2), **Yutaka Ito.** *(1) Department of Psychiatry, Harvard Medical School, Boston, MA, (2) Developmental Biopsychiatry Research Program, McLean Hospital, Belmont, MA, (3) Northeastern University College of Nursing, Boston, MA*

ABSTRACT

•***Objective:*** Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most common psychiatric disorders of childhood. We compared nocturnal activity levels and actigraph-assessed sleep parameters in prepubertal ADHD boys and normal controls to ascertain differences between ADHD boys with and without comorbid affective disorders.

•***Method:*** The sample consisted of 55 unmedicated prepuberal boys, 32 diagnosed with ADHD and 23 healthy normal controls. The ADHD group consisted of 13 boys with comorbid mood disorders and 19 boys without mood disorders. Children were studied using belt-worn ambulatory activity monitors for 3-5 continuous school days. Sleep parameteres were calculated using available sleep-wake scoring algorithms.

•***Results:*** Nocturnal activity levels were 46% higher in ADHD than controls (p<.02) and ADHD subjects also displayed more minutes awake time after sleep onset (40.7 vs. 28.4 min., p<.05), and significantly more awakenings (16.9 vs. 10.2, p<.0005). However, increased activity was largely accounted for by a subgroup of ADHD with comorbid mood disorders, primarily major depression. ADHD children with depression had nocturnal activity levels that were 37% higher than ADHD children without depression (p=.02).

•***Conclusions:*** Most boys with ADHD without comorbid mood disorders have essentially normal sleep. Comorbid depression or anxiety may account for a significant proportion of sleep disturbance observed in ADHD.

PURPOSE

1. To compare nocturnal activity levels and actigraph-assessed sleep parameters in boys with ADHD and normal controls.
2. To ascertain differences between ADHD boys with and without cormorbid Affective Disorders.

METHODS:

SUBJECTS: The sample consisted of 55 unmedicated prepubertal boys, 32 diagnosed with ADHD (DSM-IV) by structured interview (K-SADS-E) and 23 healthy normal controls. The ADHD group consisted of 19 boys with ADHD only and 13 boys with ADHD and cormorbid mood disorders.

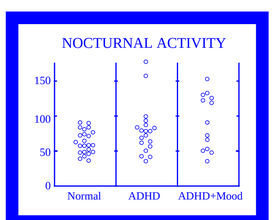
QUANTITATIVE ANALYSIS OF ATTENTION AND SLEEP: Children were studied using belt-worn ambulatory activity monitors (AM-16, Ambulatory Monitoring, Inc., Ardsley, NY) for 3-5 consecutive school days. Sleep parameters were calculated using sleep scoring algorithms (1) using available software.

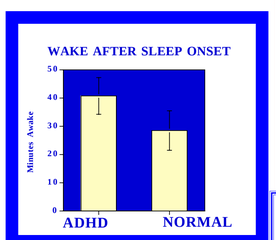
MEAN NOCTURNAL ACTIVITY LEVELS

	NORMAL	ADHD	ADHD + MOOD
N	23	19	13
NOCTURNAL ACTIVITY(counts) p<.03	61.4 ± 6.4	77.9 ± 7.0	90.8 ± 8.4

ACTIGRAPH-DERIVED SLEEP PARAMETERS

	NORMAL	ADHD
N	18	16
TOTAL SLEEP TIME	563.9 ±13.2	567.2± 12.4
SLEEP EFFICIENCY	95.20%	93.20%
WAKE AFTER SLEEP ONSET*	28.4 ± 6.9	40.7 ± 6.5 *p<..05
NUMBER OF WAKENINGS	11.5 ± 1.4	14.3 ± 1.3





MAJOR POINTS

1. Most boys with ADHD without comorbid mood disorders have essentially normal sleep.

2. Statistically, ADHD was associated with greater levels of nocturnal activity and increased wake time after sleep onset.

3. Comorbid depression or anxiety may account for a significant proportion of sleep disturbance observed in ADHD.

•References: 1 Sadeh A, Alster J, Urbach D, Lavie P. Actigraphic based automatic bedtime sleep-wake scoring. J Ambulatory Monitoring 1989, 2:209-216.
2Ramos Platon MJ, Vela Bueno A, Espinar Sierra J, Kales S. Hypnopolygraphic alterations in Attention Deficit Disorder (ADD) children. Int J Neurosci 1990, 53:87-101.
Supported by NIMH R01 MH48343 to MHT.