

# SLEEP DISORDERS & THE IMPLEMENTATION OF ACTIGRAPHY\*

## Insomnias

- **Actigraphy** can measure and analyze the common sleep parameter complaints of insomnias: prolonged and/or increased sleep latency, increased number and duration of awakenings, increased wake after sleep onset (WASO), short overall sleep time, and reduced sleep efficiency. [p. 4]
- **Paradoxical Insomnia:** the patient shows a consistent marked mismatch between objective findings from polysomnography or actigraphy and subjective sleep estimates derived from either self-report or a sleep diary. [p. 10]
- **Psychophysiological Insomnia:** Nocturnal monitoring with actigraphy produces overestimates of sleep time and underestimates of wake time, presumably due to a propensity for those with this condition to remain relatively motionless while awake in bed. [p. 7]

## Hypersomnias of Central Origin Not Due to a Circadian Rhythm Sleep Disorder, Sleep Related Breathing Disorder, or Other Cause of Disturbed Nocturnal Sleep

- **Idiopathic Hypersomnia with Long Sleep Time:**
  - i. For the correct interpretation of polysomnographic findings, the sleep-wake schedule must have been standardized for at least seven days before the polysomnographic testing (and documented by sleep log or actigraphy) ... [p. 99]
  - ii. The patient has long nocturnal sleep time (more than 10 hours) documented by interviews, actigraphy, or sleep logs. [p. 99]
- **Idiopathic Hypersomnia without Long Sleep Time**
  - i. For the correct interpretation of polysomnographic findings, the sleep-wake schedule must have been standardized for at least seven days before the polysomnographic testing (and documented by sleep log or actigraphy) ... [p. 102]
  - ii. The patient has normal nocturnal sleep (greater than 6 hours but less than 10 hours) documented by interviews, actigraphy, or sleep logs. [p. 102]
- **Behaviorally Induced Insufficient Sleep Syndrome**
  - i. The patient's habitual sleep episode, established using history, a sleep log, or actigraphy, is usually shorter than expected from age-adjusted normative data. [p. 105]

## Circadian Rhythms Sleep Disorders

- **Circadian Rhythm Sleep Disorder, Delayed Sleep Phase Type (Delayed Sleep Phase Disorder)**
  - i. Sleep log or actigraphy monitoring (including sleep diary) for at least seven days demonstrates a stable delay in the timing of the habitual sleep period (delayed sleep onset and sleep offset). [p. 119]
- **Circadian Rhythm Sleep Disorder, Advance Sleep Phase Type (Advanced Sleep Phase Disorder)**
  - i. Sleep logs or actigraphy monitoring (including sleep diaries) for at least seven days demonstrate a stable advance in the timing of the habitual sleep period (sleep onset and sleep offset that are advanced relative to conventional times) [p. 122]
- **Circadian Rhythm Sleep Disorder, Irregular Sleep-Wake Type (Irregular Sleep-Wake Rhythm)**
  - i. Sleep logs and actigraphy monitoring show the expected lack of a clear circadian rhythm of the sleep-wake cycle which, instead, is characterized by multiple irregular sleep and wake bouts (at least three) throughout the 24-hour period. [p. 124-125]
- **Circadian Rhythm Sleep Disorder, Free-Running Type (Nonentrained Type)**
  - i. Recording of sleep logs and actigraphy over prolonged periods demonstrate the lack of a stable relationship between the sleep-wake cycle and the 24-hour day (demonstrates a pattern of sleep and wake times that typically delays each day with a period longer than 24 hours). When sleep schedules follow the endogenous circadian propensity for sleep and wake, actigraphy and polysomnography are usually normal for age, but sleep-onset and wake times are typically delayed each day. [p. 127]
- **Circadian Rhythm Sleep Disorder, Jet Lag Type (Jet Lag Disorder)**
  - i. When performed, polysomnography or actigraphy shows a loss of a normal sleep-wake pattern or a mismatch between the timing of sleep and wakefulness with the desired sleep-wake pattern of the local time. [p.129-130]
- **Circadian Rhythm Sleep Disorder, Shift Work Type (Shift Work Disorder)**
  - i. Sleep diaries or actigraphy monitoring for seven days are very useful in demonstrating a disrupted sleep-wake pattern consistent with shift work sleep disorder (demonstrates a disturbed circadian and sleep-time misalignment). [p. 132]
- **Circadian Rhythm Sleep Disorder Due to a Mental Condition**
  - i. Recordings of sleep diaries and actigraphy over a period of at least seven days demonstrate sleep onsets and sleep offsets that may be delayed or advanced relative to conventional times,

irregular or free running (demonstrates disturbed or low amplitude circadian rhythmicity). [p. 134]

## **Sleep Related Movement Disorders**

- **Restless Leg Syndrome**
  - i. Activity monitoring with high-frequency sampling and body-position monitoring may be attached to the ankle or foot to provide an alternative measure of PLMs. Recordings usually include monitoring of both legs and are conducted over three to five nights [p. 179]
  
- **Periodic Limb Movement Disorder**
  - i. Newer actigraphic monitors with high sampling rates have been demonstrated to adequately detect PLMS. Although polysomnography is required to rule out PLMS directly caused by SRBDs, actigraphy promises to be a powerful research tool to look at PLMS and symptoms that might be related, particularly in light of the known night-to-night variability of PLMS. [p. 184]

## **Isolated Symptoms, Apparently Normal Variants, and Unresolved Issues**

- **Hypnagogic Foot Tremor and Alternation Leg Muscle Activation**
  - i. Polysomnographic or activity monitoring demonstrates:
    - Recurrent EMG potentials or foot movement typically at 1 to 2 Hz (range 0.5 to 3 Hz) in one or both feet
    - Burst potentials longer than the myoclonic range (greater than 250 milliseconds) and usually less than one second
    - Trains lasting 10 seconds or more. [p. 214]

\*As listed in the 2005 American Academy of Sleep Medicine Intl Classification of Sleep Disorder Manual (ICSD)].

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