Parasomnias

Things that go Bump in the Night

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Emerald Sleep Disorders Center
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Old Scottish Prayer

From ghoulies and ghosties
And three-leggity beasties
And things that go bump in the night
Good Lord, deliver us.
Sleep Physiology

- Wakefulness
- REM
- Indeterminate
- NREM
Wakefulness
Stage 1 NREM
- \( \Theta \) Waves

Stage 2 NREM
- Sleep Spindles
- K-Complexes
Stage 3 NREM
• 20-50 % δ Waves

Stage 4 NREM
• > 50 % δ Waves
Stage REM
Alpha Waves
Conjugate Eye Movements
NREM is more common in the first part of sleep. REM is more common in the latter half of sleep.
Parasomnias

- Impressive Phenomena
- Positive Family History
- Usually Deep NREM Sleep (Stages 3/4)
- Common in childhood, decrease with age
  - Persistence into adulthood NOT a sign of psychopathology
- Can be induced or precipitated by fever, sleep deprivation, and certain medications
Parasomnias are disruptive sleep-related disorders that can occur during arousals from REM sleep or partial arousals from Non-REM sleep. Parasomnias include nightmares, night terrors, sleepwalking, confusional arousals and many others.
Sleep Wake Transition Disorders

- Sleep Starts
- Hypnogogic (sleep onset) hallucinations
- Hypnopompic (end of sleep) dreams
- Leg cramps
- Rhythmic movement disorder
Partial Arousal Disorders

• Confusional Arousals
• Sleep Walking & Talking
• Night Terrors
Other Parasomnias

- Bruxism
- Enuresis
- Nocturnal Paroxysmal Dystonia
- Nocturnal Seizures
REM Parasomnias

- Nightmares
- REM Behavior Disorder
- Sleep Paralysis
<table>
<thead>
<tr>
<th></th>
<th>Nightmares</th>
<th>Night Terrors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>3 - 6 yrs</td>
<td>4 - 8 yrs</td>
</tr>
<tr>
<td><strong>Sleep Stage</strong></td>
<td>REM</td>
<td>NREM (3/4)</td>
</tr>
<tr>
<td><strong>Time of Night</strong></td>
<td>Late</td>
<td>Early</td>
</tr>
<tr>
<td><strong>State on waking</strong></td>
<td>Upset / Scared</td>
<td>Disoriented</td>
</tr>
<tr>
<td><strong>Response to parents</strong></td>
<td>Consolable</td>
<td>Unaware of Parents</td>
</tr>
<tr>
<td><strong>Return to Sleep</strong></td>
<td>Difficult</td>
<td>Easy / Rapid</td>
</tr>
<tr>
<td><strong>Memory of Event</strong></td>
<td>Vivid</td>
<td>None</td>
</tr>
</tbody>
</table>
## Nightmare or Night Terror? (American Academy of Pediatrics, 1998)

<table>
<thead>
<tr>
<th></th>
<th>Nightmare</th>
<th>Night Terror</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scary dream awakens child.</td>
<td></td>
<td>Child awakes only partially, if at all.</td>
</tr>
<tr>
<td>Occurs in last hours of the night.</td>
<td></td>
<td>Occurs one to four hours after child falls asleep.</td>
</tr>
<tr>
<td>Child cries and is afraid.</td>
<td></td>
<td>Child sits up, thrashes, and may struggle with caregiver. Child may scream, cry or talk aloud. Eyes may be staring ahead, with heart racing.</td>
</tr>
<tr>
<td>Child is aware of caregiver.</td>
<td></td>
<td>Child is not very aware of caregiver.</td>
</tr>
<tr>
<td>Child may have trouble going back to sleep.</td>
<td></td>
<td>Child often goes back to sleep without fully awakening.</td>
</tr>
<tr>
<td>Child often remembers dream and may want to talk about it.</td>
<td></td>
<td>Child has no memory of a dream, or of waking up, screaming, or thrashing.</td>
</tr>
</tbody>
</table>
Night terrors

- A person experiencing a night terror or sleep terror abruptly awakes from sleep in a terrified state. The person may appear to be awake, but is confused and unable to communicate. They do not respond to voices and are difficult to fully awaken.

- Night terrors last anywhere from a few seconds up to 30 minutes, after which time the person usually lies down and appears to fall back asleep.

- People who have sleep terrors usually don't remember the events the next morning.
• People experiencing sleep terrors may pose dangers to themselves or others because of limb movements.
• Night terrors are fairly common in children occurring in approximately 5% of them mostly between the ages of three to five.
Night Terrors

- 5% of pre-schoolers.
- Starts between ages 4-12 and resolves spontaneously.
- Increased FHx of enuresis / sleepwalking in 1st degree relatives.
- During Stage 3-4 during 1st third of night.
- Sits upright, stares, appears frightened, screams, cries, autonomic arousal, unresponsiveness.
  - Lasts ~ 10 minutes then child returns to undisturbed sleep. No recall.
SLEEP TERRORS

'Parvor Nocturnus'

- Extreme ANXIETY with consistent behavior & autonomic signs (tachycardia, flushing, sweating).
- Unresponsive to consolation or external stimuli.
- Confused, disoriented, amnestic
Night Terrors

• Not associated with psych problems in childhood; although in adults, associated with PTSD, panic disorders
• If disruptive or occur daily, can try Benzo qhs.
• Sometimes can be manifestation of seizures
Onset of Night Terror - EEG

- Spontaneous attack during stage 3 of NREM sleep
- 2s of diffuse hypersynchronous high voltage delta wave arousal
- Brief EEG delta discharge immediately preceding the clinical episode
- Increased heart rate (shown from EKG)
N-REM vs. REM

- Non-REM
- Slow EEG
- Muscular activity
- Dreaming rare
- 80% of sleep time

- REM (paradoxical)
- EEG similar to awake person
- No movement
- Dreaming common
- Hard to arouse easily
- 20% of sleep time
Causes of Night Terrors

- Genetic Factors
- Sleep Disordered Breathing (SDB)
- Acute Triggers
Genetic Factors

Guilleminault et. al. 2003
- 35% of children with both NT and SDB have at least 1 immediate relative with parasomnia.

Kales et. al. 1980
- 96% had 1 or more relatives in the pedigree with NT or Sleepwalking.

Owens et. al. 1999
- 60% risk if both parents were affected.
Obstructive Sleep Apnea

- Periodic apneas due to sleep-related airway obstruction
  - Large adenoids
  - Obesity
  - Not all snorers have OSA

- Daytime Sleepiness in the short-term

- Pulmonary hypertension and right heart failure in the long term
Acute Triggers

Mild increases in *psychosocial stress* and relative *sleep deprivation* are known to trigger night terrors in affected individuals. These triggers most likely play a synergistic role in evoking the night terror, and are not the primary source when they
Educate

• Make sure parents understand
  – Transitory: Usually end on their own
• Regular sleep pattern
• Safe environment
  – No bunk beds, safety gates, etc
• Remove sleep disturbances
  – Night lights, sounds, etc
• Protect but don’t awaken
Behavioral Intervention
“Waking Treatment”

- Usually occur around same time each night
- Track timing of night terrors for a couple of nights
- Fully wake up 15-30 mins before usually occur
  - Allow to sleep again after 5 minutes
- After week, stop waking. If terrors return, repeat waking for one more week
- 90% effective in study of 50 children (Oakey)
Prevalence of Parasomnias in Childhood

Any
Sleepwalking
Sleeptalking
Night Terrors
Restless Legs
Enuresis
Bruxism

Persists
Persists
Persists
Persistence of Childhood Parasomnias into Adolescence

- Enuresis
- Sleep Terrors
- Bruxism
- Sleepwalking
Parasomnias Go Together

- Sleepwalking
- Sleeptalking
- Night Terrors
- Bruxism
Sleep Bruxism

- Up to 88% of children; 20% of adults
- Any stage of sleep
- May result in damage to the
- Periodicity of 20 to 30 seconds.
- Malocclusion plays no role in bruxism
Sleptalking

- Begins during school age
- NREM and REM sleep
- No treatment
SLEEP WALKING (nonREM)

- A confusional arousal with MOVEMENT
- Common in children (peak age 4-8 years)
- Diagnosis: Consistent clinical presentation & PSG shows behavior in nonREM sleep without epileptic EEG
- Subtypes: Talking, Nocturnal Eating, Sleep Sex, Others
SLEEP WALKING

Predisposing factors:
• some meds (TCA, Lithium, hypnotics)
• fever, sleep deprivation,
• stimuli - full bladder, sleep apnea, etc
• Family history
Sleepwalking

• More than just walking around…
  – Simple Behaviors
  – Complex Behaviors

• Begins in ages 4-8 yrs and resolves spontaneously by adolescence.
• 10 % of children (2.5 % of adults)
• Positive Family History
• Stage 3-4 Sleep; 1st third of night.
Nocturnal Enuresis

- NREM sleep
- May be restricted to Stage 3-4
- Increased bladder pressures during deep sleep
- Males with Family History
- 15% of 5 year olds
- 10% cure per year, with 3-5% of adolescents
Sleep Wake Transition Disorders

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SLEEP STARTS

• Extremity jerks at sleep onset. Often with sense of falling, movement, light or noise.
• Reported by majority of people. Usually benign. Variable (nightly - annual)
• Awakenings with jerks during sleep could be restless legs syndrome.
LEG CRAMPS

- Triggered by movement or muscle contraction.
- Predisposing: pregnancy, diabetes, exercise (poor conditioning), medications
- Exclude: RLS, PLM, OSA, focal seizures, low calcium, neuropathy
NonREM: CONFUSIONAL AROUSALS

- a ‘partial awakening’ - disorientation, slow speech, slow thinking, poor memory, inappropriate behavior, may last a minute or several hours
- **NO DREAMING, WALKING** or **FEAR**, bland emotional state
- PSG shows nonREM sleep (stage 3 & 4 most commonly)
- Predisposing factors: anything that deepens sleep, Family history, other parasomnias
REM Parasomnias

- Nightmares
- REM Behavior Disorder
- Sleep Paralysis
NIGHTMARES

- Dream with high anxiety - may trigger awakening with good recall
- Usually has autonomic changes of anxiety
- 4x more frequent in women than men
- More with: Depression, PTSD, schizotypical, alcohol dependency
- More with: beta blockers, L-dopa, withdrawal from tricyclics
REM BEHAVIOR DISORDER

- 'Acting out dreams'
- Failure of the usual paralysis during dreaming
- Exclude: seizures & psychiatric disorders
- Usually (60%) no cause or psychopathology
- Men > women
- CNS - early Parkinson's, Alzheimer's, etc
Sleep Motor Phenomena

• Hypnic Jerks
• Body Rocking
• Restless Legs Syndrome
  – “Periodic Limb Movement Disorder”
  – Parathesias and desire to move the legs
  – Stage 1-2 NREM Sleep
  – More common in children than recognized
    • 40% start in childhood
“Restless Legs Syndrome”

- “Periodic Limb Movement Disorder”

- Stage 1-2 NREM Sleep
- More common in children than recognized
  - 40% start in childhood

- Secondary Causes
  - Anemia, Pregnancy, Uremia, Neuropathy
Periodic Limb Movement Disorder
All Sleep Phenomenon can be a Seizure...

- Anything that is recurrent, stereotyped, and inappropriate may be the manifestation of a seizure
- Most often confused with sleep terrors,
- More common in the first 2 hours of sleep, or around 4-6 am.
- More common in kids than adults.
Impact of Parasomnia

- Personal & family safety
- Maneuvers to minimize behaviors
- Cause of worries & depression
- Sleep deprivation, fatigue
- Are the behaviors crimes?
- Associated psych & neurological disorders
- Need to exclude other sleep disorders