Parasomnias:

“Things that go crash in the night”

Roslinde M. Collins, MD, D,ABSM, FCCP, FAASM
Medical Director, Center for Sleep Disorders at Rutland Regional Medical Center, VT
rcollins@rrmc.org
September 13, 2013
NEPS Conference
Disclosure

• I am a paid speaker for UCB, a pharmaceutical company.
• Please respect patient confidentiality. If you recognize a patient in an educational video, please do not disclose this information.
• Some videos are courtesy of Hrayr Attarian, MD.
Overview

• What is a parasomnia?
• What are the types of parasomnias?
• Review diagnosis of these disorders with case presentations.
• Identify PSG abnormalities associated with these diagnoses.
Definition of Parasomnia:

“An unpleasant or undesirable behavior or experiential phenomena that occur predominantly or exclusively during the sleep period.” Principles and Practice of Sleep Medicine, 4th edition

“Undesirable physical events or experiences that occur during entry into sleep, within sleep, or during arousals from sleep...(and) are clinical disorders because of the resulting injuries, sleep disruption, adverse health effects, and untoward psychosocial effects.” ICSD-2
Categories of Parasomnias

- **Primary** (disorders of sleep states)
  - NREM
  - REM
  - REM+/-NREM
    - (Sleep Related Movement Disorders are categorized separately and not reviewed in this lecture)

- **Secondary** (organ system disorders that occur during sleep)
  - Examples include night sweats, nocturnal panic attacks
NREM Sleep-Arousal Parasomnias

• Sleepwalking
• Sleep Terrors
• Confusional Arousals
REM Related Parasomnias

- REM Behavior Disorder
- Recurrent Isolated Sleep Paralysis
- Nightmare Disorder
REM+/-NREM Associated Parasomnias

- Sleep Related Dissociative Disorders
- Sleep Related Groaning (Catathrenia)
- Sleep Related Hallucinations (hypnogogic or hypnopompic)
- Exploding Head Syndrome
- Sleep Related Eating Disorder
- Sleep-Sex (Sexsomnia?)
The Sleep Period

Alternating states and stages of sleep that occur over a sleep period:

**NREM**: Non-Rapid Eye Movement; Stages N1-3; 75% of the night

**REM**: Rapid Eye Movement; Dreams occur; 25% of the night
Keys to Diagnosing Parasomnias

• Patient history
  – Can they remember events?
• Witness history (bedpartner or other)
  – Description of behavior
  – What time of night?
• +/- Polysomnogram
• +/- Ancillary testing (e.g. EEG, psychiatric evaluation, drug screen)
Case #1

• 75 yo male with history of COPD, alcoholism and recent left CEA who was admitted for COPD exacerbation and probable aspiration pneumonia.

• Patient was found passed out in his truck on the morning of admission. He drank a fifth of rum but does not remember buying or drinking it. Notes recent confusion and disorientation attributed to oxycodone (postop).

• I was asked to evaluate the patient for abnormal behavior while sleeping.
Case #1 continued

- PMH
  - HTN
  - Arthritis
  - BPH
  - Bronchitis
  - COPD
  - s/p R CEA 1/2012
  - s/p L CEA this month
  - Hyperlipidemia
  - Alcoholism
  - Neuropathy
  - PTSD

- Medications PTA
  - Norvasc
  - Crestor
  - Terazosin
  - Mirtazapine
  - Advair
  - ASA
  - Spiriva
  - Albuterol prn
  - Percocet prn
  - Metoprolol
The Patient’s History:

• Patient reports that he drove 37 miles on the night prior to admission, but does not remember getting into his truck nor buying the alcohol.

• Similar episodes have occurred in the past, two of which resulted in DUI arrests (4 and 8 years ago).

• Abnormal behavior while sleeping occurs at least once a week, and he has been known to try to cook and leave the burner on (he lives alone).
The History continued:

• Remotely, the patient used to beat up his wife while sleeping, associated with dream recollection of fighting. Episode of jumping off of bed sustaining head injury (dreaming that he jumped off a tank). He was diagnosed with PTSD attributed to his war experiences. These episodes improved with treatment for PTSD and mirtazapine.

• The patient was seen in the ED earlier this year for complaint of confusion. In the early morning hours, he drove his car to his sister’s house, hit her dog, and drove home. He was found to be confused and had no recollection of the event.

• Chronic insomnia for which he has taken zolpidem for at least 8 years.
Differential Diagnosis

- Sleepwalking
- Obstructive Sleep Apnea
- Periodic Limb Movement Disorder
- REM Behavior Disorder
- Confusional arousals
- Sleep Related Eating Disorder
- Sleep Related Dissociative Disorder
- Medication or alcohol induced
- Underlying neurologic disorder (seizure, CVA, amnesia, dementia, etc)
- Underlying medical disorder causing delirium
- Underlying psychiatric disorder
- Malingering
Evaluation

• Apnea Link in hospital abnormal.
• Polysomnogram (PSG) shows:
  – Baseline hypoxemia with average RA sat 85%
  – Sleep related hypoxemia
  – Mild OSA with an AHI of 7 associated with sleep disruption and oxygen desaturations as low as 78%
  – Uncontrolled Restless Leg Syndrome
  – Some leg movements during REM sleep
What is the *Most Likely* Diagnosis?

1) REM Behavior Disorder
2) Sleepwalking
3) Sleep Related Dissociative Disorder
4) Obstructive Sleep Apnea
5) Abnormal behavior caused by zolpidem
6) Both 4 and 5

Answer: #6
Zolpidem induced abnormal behavior while sleeping

- Numerous cases of sleep eating, sleep driving, rape, murder, suicide(?), fires, accidents, injuries, etc, etc, etc
- 2007 FDA warning about complex behaviors while sleeping
- Syndrome characterized by poor motor control, confusion, dysarthria, anterograde amnesia (like alcohol induced blackout)
- Daytime automatisms: impaired memory, cognition, motor performance
- Alcohol consumption plus zolpidem is bad!
- “Ambien defense”
FDA Warning Regarding Zolpidem

- Zolpidem affects people’s mental alertness and ability to drive.

- Recommended dosage of zolpidem for women should be lowered from 10 milligrams (mg) to 5 mg for immediate-release products (Ambien, Edluar, and Zolpimist) and from 12.5 mg to 6.25 mg for extended-release products (Ambien CR). For men, the FDA has informed the manufacturers that the labeling should recommend that health care professionals consider prescribing these lower doses.
#2: The Case of the Nocturnal Streaker

- Elderly male in his 90s who I am asked to see for abnormal behavior while sleeping
- Frequently found at night roaming and urinating in the halls of his community residence, naked
- Patient has no recollection of events
- Complex PMH, many medications including lorazepam 2mg qHS for sleep
- He will be evicted from his apartment if these episodes persist (lives alone)
Differential Diagnosis

- Sleepwalking
- Obstructive Sleep Apnea
- Periodic Limb Movement Disorder
- REM Behavior Disorder
- Confusional arousals
- Sleep Related Eating Disorder
- Sleep Related Dissociative Disorder
- Nocturia

- Medication or alcohol induced
- Underlying neurologic disorder (seizure, CVA, amnesia, dementia, etc)
- Underlying medical disorder causing delirium
- Underlying psychiatric disorder
- Malingering
What is the *Most Likely* Diagnosis?

1) REM Behavior Disorder
2) Sleepwalking
3) Abnormal behavior due to benzo intoxication
4) Obstructive Sleep Apnea
5) Sleep Related Seizures

**Answer:** #3
Evaluation and Treatment for Case #2

- Patient refused sleep study
- Lorazepam wean cured abnormal activity
- Patient refused further lorazepam wean below 1mg and was lost to follow-up
Case #3: There’s Something Wrong With My Child!

- 7 year old girl with a history of asthma who is waking up once or twice a week crying, screaming, hitting and sometimes gets out of bed. She is inconsolable, episodes last 5-10 minutes and resolve when she goes back to sleep.
- Similar episodes occurred when she was younger but did not happen frequently. No daytime symptoms.
- Albuterol prn (has not needed recently). PE normal.
- The patient has no recollection of events, but parents are distraught.
- The family recently moved and the patient just started attending a new school.
What is the *Most Likely* Diagnosis?

1) REM Behavior Disorder
2) Sleepwalking
3) Sleep Terrors
4) Obstructive Sleep Apnea
5) Sleep Related Seizures

**Answer: #3**
Characteristics of Night/Sleep Terrors

• The patient appears to be awake with behavioral manifestations of intense fear, can be violent
• Episodes are very distressing to witnesses
• The patient is inconsolable, difficult to arouse
• Occurs during N3 (delta or deep) sleep and therefore usually the first third of the night
• More common in children
• Less common in adults (2.2%), suspect other disorders
• Can be treated with benzos, trazodone, paroxetine (all off label)
• Episodes can be exacerbated by stress
Case #4: The Man Who Mistook His Wife for a Deer

- 54 year old man concerned about possibly killing his wife in his sleep.
- Recent episode of dreaming that he was hunting, trying to break the neck of a wounded deer. Woke up to his wife screaming, they were standing in bed with his arm around her neck.
- Previous episodes of kicking, punching and thrashing resulting in injury to his wife for years. Dream recollection of fighting.
- PMH: HTN, occasional back pain
- Meds: HCTZ, ibuprofen prn
- PE normal
- PSG: increased muscle activity during REM sleep
What is the *Most Likely* Diagnosis?

1) REM Behavior Disorder
2) Sleepwalking
3) Night Terrors
4) Obstructive Sleep Apnea
5) Sleep Related Seizures

**Answer: #1**
Characteristics of REM Behavior Disorder

• More common second half of night, but can occur early
• Absence of atonia
• Dream enactment (can interact with environment)
• Potentially violent behavior endangering one’s life or others
• Recollection of dream content
• Most respond to clonazepam for treatment (off label)
• Estimated 0.5% of the population
Diagnostic Criteria for REM Behavior Disorder (ICSD-2)

A. Presence of REM sleep without atonia: the EMG finding of excessive amounts of sustained or intermittent elevation of submental EMG tone or EMG limb twitching

B. At least one of the following is present:
   i. Sleep related injurious, potentially injurious, or disruptive behaviors by history
   ii. Abnormal REM sleep behaviors documented during PSG
   iii. Awakening short of breath
C. Absence of EEG epileptiform activity during REM sleep unless RBD can be clearly distinguished from any concurrent REM-related seizure disorder.

D. The sleep disturbance is not better explained by another sleep disorder, medical or neurologic disorder, mental disorder, medication use, or substance use disorder.
REM Behavior Disorder (RBD)

• Idiopathic

• Strong relationship to Parkinson’s disease, Narcolepsy, and other underlying organic brain disease (Infectious, postinfectious, degenerative, vascular, tumor, traumatic, congenital, vascular)

• Medication/substance related:
  – Venlafaxine, TCAs, Fluoxetine, anticholinergics
  – Intoxication with TCA, MAOI, caffeine
  – Withdrawal from alcohol, others
REM Behavior Disorder and Neurologic Degenerative Disease

• At least half of patients will develop neurodegenerative disorders (Parkinson’s disease, multiple system atrophy, dementia with Lewy body disease)

• RBD can precede manifestation of disease by more than 10 years (average onset of Parkinson’s is 4 years)
Case #5: The Sniper’s Husband

• 25 year old male
• No significant PMH
• No Medications
• Newly married: his wife is concerned because she has awoken several times with her husband standing at the foot of their bed, assembling and loading her gun.
• He has no recollection of these events.
• Patient has had a history of sleepwalking since childhood.
• PE and PSG are normal, no daytime symptoms
Analysis of postarousal EEG activity during episodes
Analysis of postarousal EEG activity during episodes
What is the *Most Likely* Diagnosis?

1) REM Behavior Disorder
2) Sleepwalking
3) Periodic Limb Movement Disorder
4) Obstructive Sleep Apnea
5) Malingering

Answer: #2
Characteristics of Sleepwalking

• Very complex behavior can occur (driving, cooking, sexual, eating, murder, etc.)
• The patient has little or no recollection of events
• More common in childhood (1-17%)
• Affects 2-4% of adults
• Exacerbated by alcohol, sleep deprivation, medications (sedatives)
• Can be triggered by underlying sleep disorder; can be cured by treating other sleep disorder
Characteristics of Sleepwalking continued

- Genetic component
- Occurs predominantly during stage N3 but can occur during stage N2
- Most often occurs first half of night
- “Sleepwalking Defense”: forensic cases of rape and murder
- Most commonly treated with clonazepam (off label), hypnosis
- Normal PSG does not rule out this diagnosis
Diagnostic Criteria for Sleepwalking (Somnambulism), ICSD-2

A. Ambulation occurs during sleep

B. Persistence of sleep, an altered state of consciousness, or impaired judgment during ambulation is demonstrated by at least one of the following:

i. Difficulty in arousing the person
ii. Mental confusion when awakened
iii. Amnesia (complete or partial)
iv. Routine behaviors that occur at inappropriate times
v. Inappropriate or nonsensical behaviors
vi. Dangerous or potentially dangerous behaviors

(The sleep disturbance is not better explained by another sleep disorder, medical or neurologic disorder, mental disorder, medication use, or substance use disorder.)
What Do You Prescribe for Case #5?

- He cannot take any potentially sedating medications
- Hypnnosis?
- Secure the sleeping environment
- Lock up the guns and bullets, do not let the patient know the location of the keys
- Bed alarm
- Avoid alcohol, sleep deprivation
Case #6: A Bruised Husband

- 35 year old female h/o depression, migraine headaches brought in for evaluation by her husband, c/o punching and kicking while asleep
- Episodes started about 6 months ago, increasing in frequency and intensity
- Patient recalls vivid fighting dreams during which she is a Superhero. Similar dreams did not occur before 6 months ago.
- PMH: above
- Meds: venlafaxine (started 6 months ago), ibuprofen prn
- PE normal
What is the Most Likely Diagnosis?

1) REM Behavior Disorder due to venlafaxine
2) Sleepwalking
3) Night Terrors
4) Obstructive Sleep Apnea
5) Sleep Related Seizures

Answer: #1
Treatment for Case #6

- Wean off of venlafaxine, switch to bupropriion
- Episodes and vivid dreams resolved
- If abnormal activity persisted, patient would require further evaluation
  - Polysomnogram
  - Brain MRI/MRA
- *Venlafaxine induced RBD can persist once off of medication
Case #7: “I fell down the stairs.”

- 55 yo female seen in hospital for evaluation of sleepwalking.
- Fell down stairs in her home around midnight, sustaining left hip and left wrist fractures requiring surgery. No recollection of events until she awoke at the bottom of the stairs.
- Similar episode occurred a few years ago, but serious injuries did not occur.
- Sleepwalking episodes occur a few times a year and date back to childhood.
- PMH: none significant
- Medications: none
- SH: normally drinks wine with supper
- ROS: snoring, daytime sleepiness
- PSG: Mild OSA with an AHI of 8 but a RERAI of 23. High overall arousal index of 37.
What is the Most Likely Diagnosis?

1) REM Behavior Disorder
2) Sleepwalking
3) Night Terrors
4) Obstructive Sleep Apnea
5) #2 and #4

Answer: #5
OSA causes Arousals and can precipitate behavior.
Case #7 Treatment

- Positional therapy
- Weight loss
- Declined medication
- Alarm on bedroom door
- Avoid alcohol, sleep deprivation
Sleep Related Eating Disorder

• The patient is not awake (Night Eating Syndrome)
• Frequent episodes
• Little and usually no recollection of event
• Wakes up with food in bed and/or kitchen a mess
• Weight gain
• DDx sleepwalking or RBD
• Abnormal melatonin, leptin levels
• F>M; may be associated with daytime eating disorders
• Can be caused or precipitated by benzos, zolpidem
• Can be treated with clonazepam, dopaminergics, fluoxetine, topirimate (all off label)
Differential Diagnosis Includes

Malingering

- Regina v. Parks. Kenneth Parks, a young Canadian man, was acquitted in the 1987 murder of his mother-in-law after using the sleepwalking defense. On the night of the death, he arose from bed, drove 14 miles to the house of his in-laws—with whom he was said to be close—and strangled his father-in-law until the man passed out. He bludgeoned his mother-in-law with a tire iron and stabbed them both with a kitchen knife. The woman died; the man barely survived. Parks then arrived at a police station. Police said he seemed confused about what had transpired, and they noted something odd: Parks appeared oblivious to the fact that he'd severed tendons in both his hands during the attack. That obliviousness to pain, along with other factors, including a strong family history of parasomnias, led experts to testify that Parks had been sleepwalking during the attack. Not conscious, not responsible, not guilty.
When Should a Patient With Abnormal Behavior While Sleeping Have a PSG?

- Potential (or history of) injury to self or bedmate/housemates
- Brand new behavior in an adult
- Suspicion for other underlying sleep disorder as the cause (OSA, RLS, PLMD)
- Behavior persists despite medication changes (e.g. sedatives, benzos, psychotropics)
- If sleep related seizures are suspected, PSG with extended EEG protocol is preferred
Treatment Options for Parasomnias

- Secure the sleeping environment
- Consider bed alarm
- Consider physical restraints if hospitalized
- Consider medication (clonazepam is used often, all meds are off label)
- Avoid potential precipitants (alcohol, sleep deprivation)
- Discontinue medications that could be causing or exacerbating abnormal behavior
- Treat other underlying sleep disorders
Questions?