REM Sleep Behavior & Other Parasomnias

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International Classification of Sleep Disorders (ICSD)

- Parasomnias
- Sleep Related Movement Disorders
- Sleep Related Breathing disorder
- Insomnia
- Central Disorders of Hypersomnolence
- Circadian Rhythm Sleep Wake Disorders
- Other Sleep Disorders
Objectives

- Overview of Parasomnias
- NREM Parasomnias
- Nocturnal Frontal Lobe Seizures vs NREM Parasomnias
- REM Sleep Behavior Disorder
Long time ago....... 
- Parasomnias: unresolved emotional conflict 
- Sigmud Freud: Sleepwalking represented an attempt to fulfill an unconscious desire 

1924 Hans Berger 
Invented the first electroencephalogram! 

1936 Harvey and Lewis described the characteristics of the different stages of Sleep 

1953 Eugene Aserinsky 
Application of newly developed EOG (electro-oculography) 
Eugene Aserinsky and Nathaniel Kleitman at the University of Chicago first described REM sleep
Sleep Lab 1970

First Clinical Sleep Laboratory was Developed in Stanford

1989 Antonio Culebras, MD

First to describe RBD secondary to stroke in the ponto-mesencephalic tegmentum

1980 Carlos Schenck, MD

First reported on dream-enacting behavior primarily affecting middle aged men....RBD

TODAY

> 80 identified Sleep Disorders
- Parasomnias are viewed as a disruption in the sleep cycle leading to incomplete awakenings

Present
What are Parasomnias?

“PARA” – Alongside of “SOMNUS” – Sleep

Occur during entry into sleep, within sleep or during arousals from sleep

Involve complex, seemingly purposeful, goal directed behaviors WITHOUT consciousness

The Nightmare: Henry Fuseli, 1781
Sleep Stages

Disorders of Arousal
NREM Parasomnias
Sleep Related Seizures
RBD

NREM
REM
NREM Parasomnias

Confusional Arousals
- Children age < 5
- Slow speech & mild agitation
- Moaning, crying
- Lasts 5 – 10 minutes
- Attempts at awakening the patient may prolong event

Sleep Terrors
- 15% of children between age 3 – 10 years
- Usually resolve by mid teen years
- Most dramatic
- Abrupt cry followed by autonomic and Behavioral fear
- Can last 5 to 15 minutes
- May appear awake with eyes open
- Clumsy purposeful movements

Sleep Walking
- Onset age 4 – 8 years
- 2% of the adult population
- Motor Behaviors: Simple to Complex
- Purposeful movements
- Amnesia +/- partial recall

Sexomnia
- Sleep related abnormal sexual behavior
- Variant of confusion arousal
- Sexual behaviors WITHOUT awareness of intention
- Occurs 1 – 2 hours after sleep onset
- Occur in isolation or in association with sleep walking
- Medal legal issues
NREM Parasomnias

- Represent a spectrum of behaviors produced by a faulty arousal system
- Most common in childhood but may persists into adulthood
- Amnesia for the event is characteristic
- Attempts to awaken the patient may prolong the episode

Genetic predisposition
- Sleep walking 6 x more common in monozygotic twins than in dizygotic twins *
- Sleep terrors 2 x more common in children whose parents experienced sleep walking compared to children who’s parents did not **

Pathophysiology of NREM

- Incomplete awakening from sleep

  Active: Motor Strip
  Inactive: Prefrontal & Midtemporal

**SPECT During a Sleep Walking Episode**

- **Increase** blood flow:
  - Cerebellum
  - Posterior Cingulate Cortex

- **Decrease** blood flow:
  - Frontoparietal cortex

Evaluation of the Dangerous Dreamer

Comprehensive Clinical history of the typical event provided by the patient and the bed partner including:

- Timing
- Frequency
- Semiology
- Evolution
The Frontal Lobe Epilepsy and Parasomnia Scale

Score
0 or less: NREM parasomnia
1 – 2: Indeterminate
> 3: NFLE

In initial validation studies NFLE was reliably diagnosed:
100% sensitivity
90% specificity

When diagnosis remains uncertain:
- VEEG
- Polysomnogram
Management

- Treatment depends on frequency and severity of events
  Most patients do not require pharmacological treatment

Safety Precautions
- Sleep Hygiene
  Avoid precipitating factors: alcohol and sleep deprivation

- If episodes are frequent and self injurious:
  - Clonazepam 0.5 – 1 mg, 1/2 hour prior to bedtime*
  - Melatonin 3 – 10 mg

REM Sleep Behavior Disorder

Unique parasomnia characterized by dream enactment behavior associated with loss of muscle atonia in REM sleep

Occur > 90 min after sleep onset and predominantly in the 2nd half of the night
Frequency of Reported Behaviors During RBD Dream Enactment Events

- Defense against attack by people: 57%
- Defense against attack by animals: 9%
- Adventure Dreams: 30%
- Sports Dreams: 2%
- Aggression by the Dreamer: 2%

Epidemiology of RBD

- Onset ~ age 50
- 9 x more common in men
- Affects approximately 0.5% of general population*

35 Million Affected

*Nisbet T, Enock C, Kuiken D. Dream-enacting behaviors in a normal population. Sleep 2009; 32: 542
RBD Diagnostic Criteria
ICSD III – 2015

- Repeat episodes of sleep related vocalization and/or complex motor behaviors
- These behaviors are documented by polysomnography to occur during REM sleep or, based on clinical history of dream enactment, are presumed to occur during REM Sleep
- Polysomnographic recording demonstrates REM sleep without atonia
- The disturbance is not better explained by another sleep disorder, mental disorder, medication or substance use.
Causes of RBD

Lesions affecting REM generator centers in the Brainstem
- Multiple Sclerosis
- Tumors
- Stroke

Drugs:
Psychotropics and Antidepressants
- SSRIs
- SNRI’s: Venlafaxine and TCA’s

Polysomnogram
Polysomnogram
Management
Safety Precautions

• Door alarms & Locks
• Barricade & Cover Windows
• Remove sharp objects
• Lock firearms
• Sleep in Sleeping bag
• Place mattress on the floor
Safety for the Patient & Bed Partner

53 spouses reported being assaulted
64% of 83 patients with sleeping partners

13 reported injuries caused by punching, slapping, kicking, pulling hair

2 reported strangulation

12 (15%) chose to sleep in a separate room
Pharmacological

**Clonazepam***
- 0.25 mg to 2 mg QHS
- MOA: suppression of phasic motor activity
- 80 to 90% success rate

**Melatonin**
- 3 to 12 mg QHS
- Restored atonia and improved symptoms in ~85% of patients

* Treatment of co-morbid sleep disorders

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** Kunz D, Bes F. Melatonin as a therapy in REM sleep behavior disorder patients: an open-labeled pilot study on the possible influence of melatonin on REM-sleep regulation. Mov Disord. 1999 May;14(3):507-11.
RBD and Neurodegenerative Disorders

- Associated with the development of alpha synucleinopathies later in life:
  - Parkinson’s Disease
  - Dementia with Lewy Bodies
  - Multiple system atrophy

- Thought to be related to the pathological involvement of common brainstem structures including nigraostriatal complex, locus coerulues and raphe nucleus.

Disclosure of Risks?

- Should the physician disclose the risk of neurodegenerative disease?
- Whether to break such news to patients should NOT be the question. Instead the determination of when and how to do it is important.
- Early disclosure appears to be the best approach.
What is the risk of Neurodegenerative Disease?

1996: Schenck first reported the delayed emergence of Parkinsonian disorder or Dementia in 38% of patients originally diagnosed with idiopathic RBD (mean interval of 13 years) *

Postuma et al, 2009

17.7% 5-Year Risk
40.6% 10-Year Risk
52.4% 12-Year Risk

Schenck et al, 2013

80.8% 14-Year Risk

Iranzo et al, 2014

31.3% 5-Year Risk
75.7% 10-Year Risk
90.9% 14-Year Risk

RBD may precede the diagnosis of a neurodegenerative disorder by up to **50 years** *

with a mean latency of **12.7 years** from onset of RBD to the first manifestation of neurodegeneration **

**Future Implications:**
- Ongoing research to develop Neuroprotective agents to delay/stop the phenoconversion


**Schenck CH, Mahowald MW. REM sleep behavior disorder: clinical, developmental, and neuroscience perspectives 16 years after its formal identification in SLEEP. Sleep 2002;25(2):120Y138
Characterizing the nature of complex nocturnal behaviors is one of the most difficult to diagnostic challenges in sleep medicine.

Comprehensive clinical history is required to distinguish between NFLE and Parasomnias.

When in doubt refer for evaluation:
- Upstate Sleep Clinic: Polysomnogram
- Community EMU: Video EEG
Thank You