

# Overview of Sleep Movement Disorders

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2004 February 25

Northwest Hospital Continuing Education

# Outline of talk

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- Case histories
- Classification of sleep movement disorders
- Management of common sleep movement disorders in the primary care clinic
  - Restless legs syndrome
  - REM sleep behavior disorder

# Case 1

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- GB, 66 year old man, apartment manager
  - Longstanding snoring, daytime sleepiness
  - 1 year h/o involuntary jerky movements
    - occur during both sleep and wakefulness
    - both legs and arms
    - Occasionally powerful and violent, esp at night
  - Pt concerned about harming his wife
  - Recurrent involuntary jerks of arms and legs during visit.

# Case 2

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- JM, 73 yo man, retired corporate exec
  - 20 year history of intermittent vivid dreams, once every 6 – 8 weeks
    - being chased by a wild animal
    - being confronted by adversaries
  - Spouse reports flailing and yelling often accompany the dreams
    - He has kicked and punched her several times
    - She recently moved out of the bedroom

# Case 3

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- JY, 38 year old man, roofing contractor
  - Dx with mild obstructive sleep apnea 2 years ago, uses CPAP nightly but still sleepy on most days
    - He has almost crashed his truck several times.
    - Wife reports snoring and apnea are no longer present.
  - Wife reports nocturnal movements of arms and sometimes legs.
    - Pt raises his arms and holds them above his head for a few seconds repeatedly during the night.

# Classification of common sleep movement disorders

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- Normal movements and behaviors
  - Sleep starts (hypnic jerks)
  - Recurrent sigh breaths
  - Changes in body position for pressure relief
  - Minor twitches (and occasional vocalizations) during REM sleep

# Children/adolescents

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- Sleep walking
- Rhythmic movement disorder (jactatio capitus nocturna)
- Sleep terrors
- Confusional arousals

# Adults

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- Restless sleep with frequent changes in body position
  - Twitchy non-purposeful movements of limbs or segments of limbs
  - Choreo-athetotic movements of limbs
  - Complex purposeful or semi-purposeful movements
  - Complete behaviors

# Approach to the patient with movements during sleep

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- History
  - Nature of the movements
  - Timing of the movements
  - Drugs, stimulants and alcohol
  - Neurological/psychiatric history
  - Medication review
  - Family history
  - Sleep log
  - Review of sleep environment

# Approach to the patient with movements during sleep

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- Examination
  - Mental status exam (anxiety, depression, substance abuse)
  - Neurologic exam for peripheral neuropathy and waking movement disorders (e.g., parkinsonism, motor tics)
  - Musculoskeletal exam for sources of pain (arthritis, fibromyalgia, etc.)
- Bloodwork
  - Body iron stores/CBC
  - Electrolytes/renal indices

# Restless Legs Syndrome (RLS)

- Recurrent urge to move the legs usually associated with uncomfortable or unpleasant sensations in the legs.
- More pronounced during periods of inactivity.
- Temporarily relieved by movement or stretching
- Usually worse in the evening, often after lying down

# RLS Supportive findings

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- Sx improve with elevated body temperature
- Positive family history
- Presence of periodic limb movements of sleep
- Positive response to dopaminergic therapy

# RLS symptoms

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- Patients' complaints vary widely
  - Vague ache
  - “Hot feet”
  - “Electric shocks” in the legs
  - “Ants” or “bubbles” in the veins
  - “Just have to move”
  - Spontaneous drawing or twitching of the legs
  - Severe cases may involve the arms or trunk

# RLS Differential diagnosis

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- Akathisia
    - More widespread than RLS which “feels like it’s happening in the legs”
  - Segmental or focal myoclonus
    - Tends not to be associated with “urge to move”
  - Peripheral vascular disease
    - Discomfort usually in association with use, e.g., walking or standing for long periods

# RLS prevalence/epidemiology

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- Present in 25% of the primary care population
  - Approx 1/3 have moderate to severe sx.
- Females > Males, 2:1 ratio
- Prevalence and severity increase with age
  - Occasionally present in teenagers
- Often (80%) associated with periodic limb movements of sleep

# RLS: mechanisms

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- Understading motivated by treatment response and animal models
- RLS sx probably represent a final common pathway with a variety of substrates
  - Dopaminergic/opiodergic/GABAergic dysfunction
  - Spinal cord injury (animal models)
  - Peripheral neuropathies (animal models)
    - Possible impairment of proprioceptive feedback

# RLS: etiologies

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- Secondary
  - Iron deficiency (ferritin  $\leq 50$ )
  - Uremia (prevalence of 50% or higher)
  - Neurologic lesions (myelopathy, neuropathies)
  - Medication side effect (antidepressants, lithium, antipsychotics, caffeine)
  - pregnancy
- Primary
  - Most cases familial, mode of inheritance uncertain, mechanism not understood

# RLS Treatment: conservative measures

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- Hot bath prior to bed
- Brisk walk in the evening
- Distraction from RLS symptoms
  - Vibrating bed or easy chair
- Avoidance of caffeine or other stimulants
- Review medication list and consider alternatives
- Iron rich diet
  - Red meat, liver, molasses, leafy greens, kidney beans

# RLS Treatment: dopaminergic (DA) agents

- All effective in lower doses than required for Parkinson's disease
- Levodopa 100 – 200mg
  - Occasional problems with rebound augmentation
- Direct DA agents (**ropinorole**, **pramipexole**)
  - Rebound augmentation less common
  - Higher rate of discontinuation from side effects
- Others (amantadine, selegiline)
  - Second line

# RLS Treatment: other medication classes

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- Anticonvulsants
  - Gabapentin, carbamazepine
- Benzodiazepines
  - Clonazepam
- Opioids
  - Propoxyphene, tramadol
- Clonidine

# RLS Treatment: Iron

- Indicated if total body iron stores are low or low normal (ferritin <50)
- Oral iron up to 900mg qd (usually 325mg qd)
  - Follow levels monthly
  - Absorption improved if vit C taken concurrently
  - Poor patient compliance
- **IV Iron dextran**
  - Rapid and long lasting effect (several months)
  - Dosage parameters not yet established

# REM Sleep Behavior Disorder (RBD)

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- Disorder of dream re-enactment
- Active, purposeful behaviors that are closely linked to dream material
- Behaviors are typically exploratory or aggressive
- Dreams tend to be unpleasant, vivid, frightening
- Patients often have good recall of frightening dreams though will often not be aware of having been physically active

# RBD: supportive features

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- Nature of the nocturnal behaviors is distinctly different from pt's waking personality and behaviors
- Daytime fatigue or somnolence uncommon
- Presence of superimposed neurological disease
- Increased movements during all stages of sleep
- Prodrome of sleep talking, yelling, limb twitching or jerking in 25%

# RBD: epidemiology

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- Prevalence estimated at 0.5%
- Prevalence increases with age
- Marked male predominance (10:1)
- High association with parkinsonian disorders (PD, Lewy Body Disease, etc)
  - Often the first manifestation of a parkinsonian dementia syndrome
    - Boeve et al, Neurology, Aug 1998

# RBD: differential diagnosis

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- Non-REM parasomnias
  - Confusional arousals, sleep walking
- PTSD flashback
- Nocturnal seizures
- Malingering/factitious disorder

# RBD: evaluation

- Need to distinguish from non-REM parasomnias
  - Consider referring for polysomnogram if history is ambiguous
- Neurological history and exam
  - Focus on movement disorders
- Alcohol history
  - Withdrawal lowers threshold to REM disinhibition
- Concurrent medications
  - Antidepressants may induce RBD in vulnerable persons

# RBD: management

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- Ensure safety of patient and bed partner
- Inquire about alcohol
  - Withdrawal lowers threshold to REM disinhibition
- **Clonazepam**, starting with .25 - .5 mg qhs
  - Titrate as needed/tolerated to 4mg qhs

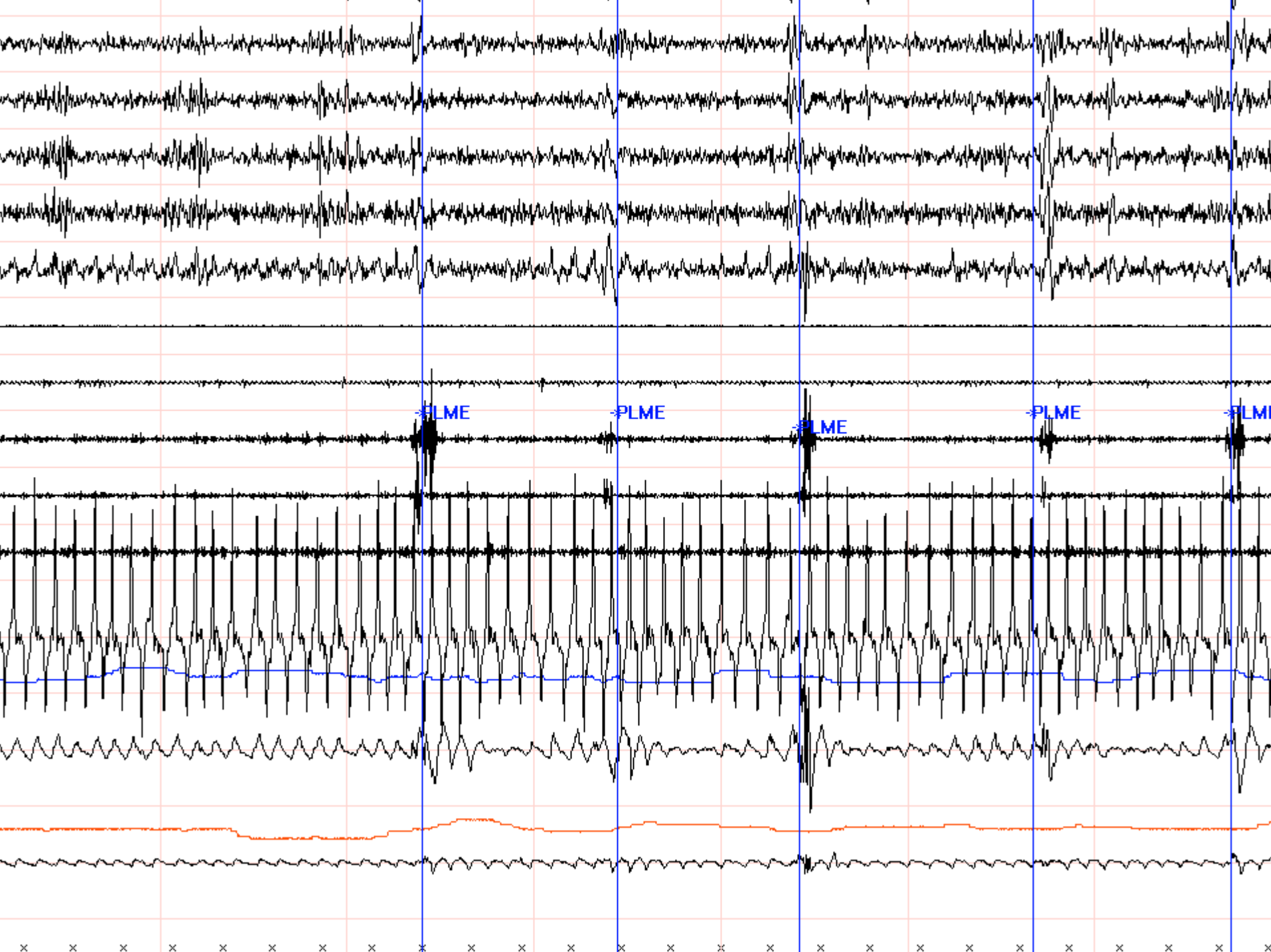
# Case 1

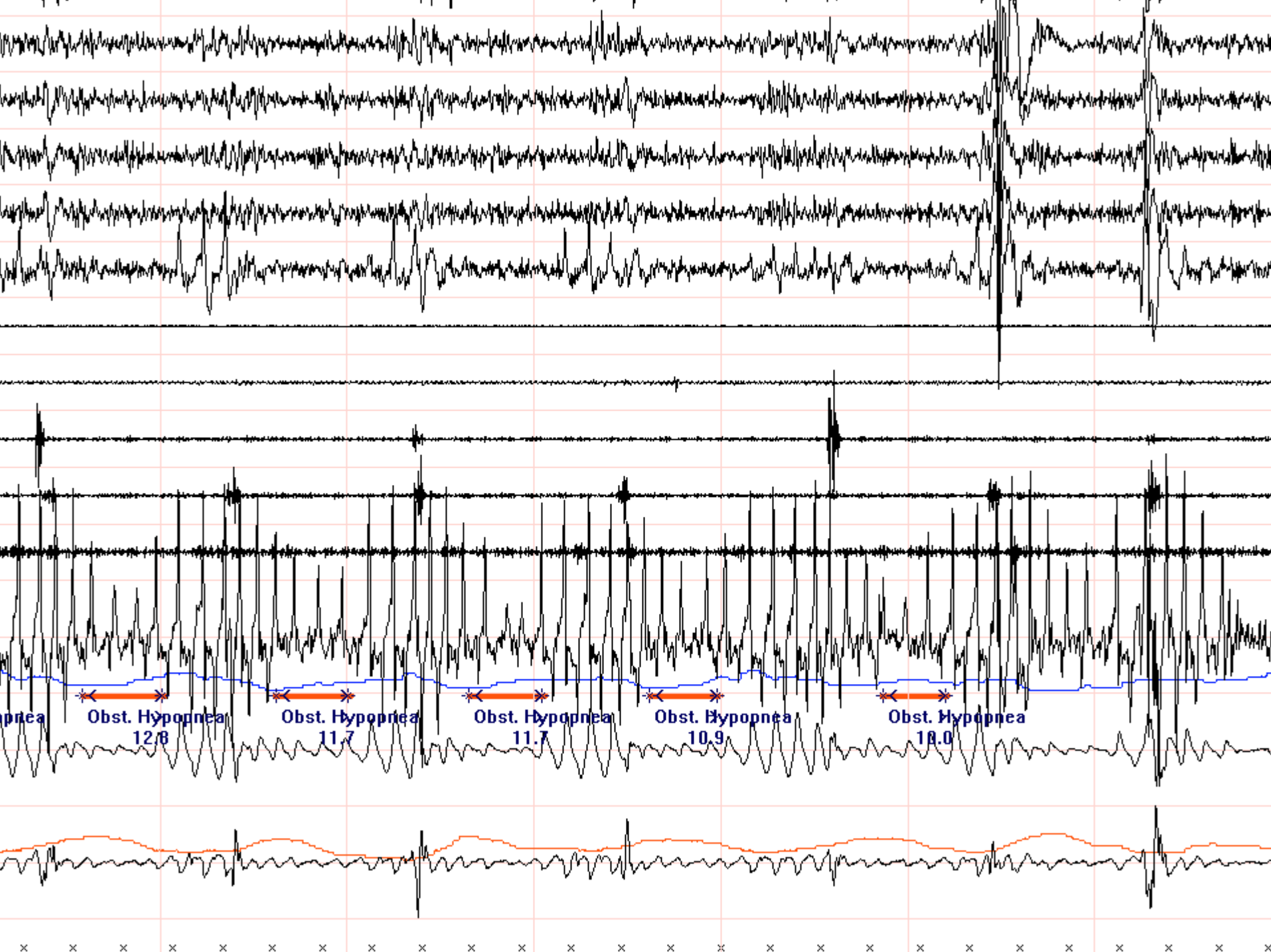
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- GB, 66 year old man, apartment manager
  - Longstanding snoring, daytime sleepiness
  - 1 year h/o involuntary jerky movements
  - Frequent involuntary jerks of arms and legs during visit.
  - Medications: omeprazole, diltiazem, hctz, asa
  - Examination: BMI 48, crowded oropharynx, normal heart, lung and neurological exam.

# Case 1: workup

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- Polysomnography
  - Moderate to severe obstructive sleep apnea
  - Severe periodic limb movements
  - Periodic limb movements did not improve following one month of CPAP therapy
- Bloodwork
  - Borderline iron levels (ferritin 45)





# Case 1: differential diagnosis

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- Severe restless legs syndrome with PLMS
- Segmental myoclonus
- Myoclonic seizures (unlikely)
- Respiratory based movement arousals
- Medication side effect (unlikely)

# Case 1: treatment

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- CPAP with optimal pressure at 11cm
- Trial of depakote 500mg bid ineffective
- Pramipexole .5mg bid and 1.5mg qhs
- Clonazepam .5mg qhs
- Continues to have mild leg movements after lying down to sleep that don't interfere with sleep onset and resolve after falling asleep

# Case 2

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- JM, 73 yo man, retired corporate exec
  - 20 year history of intermittent vivid dreams, once every 6 – 8 weeks
  - Spouse reports flailing and yelling often accompany the dreams
  - No medications, infrequent social alcohol, infrequent coffee
  - Psychiatric review of systems negative
  - Normal physical examination, BMI 23

# Case 2: differential diagnosis

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- REM Behavior disorder
- Non-REM parasomnia
- Overnight sleep study vs therapeutic medication trial?

# Case 2: treatment

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- Clonazepam introduced and increased to 1.5mg qhs
  - Now free of nocturnal behaviors for over 1 year

# Case 3

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- JY, 38 year old man, roofing contractor,
  - Dx with mild obstructive sleep apnea 2 years ago, uses CPAP nightly yet still sleepy on most days
    - Wife reports snoring and apnea are no longer present.
  - Wife reports odd nocturnal movements of arms and sometimes legs.
  - No medications.
  - No alcohol; 3 – 4 cups coffee daily in the am.
  - Psychiatric review of systems negative
  - Normal examination

# Case 3

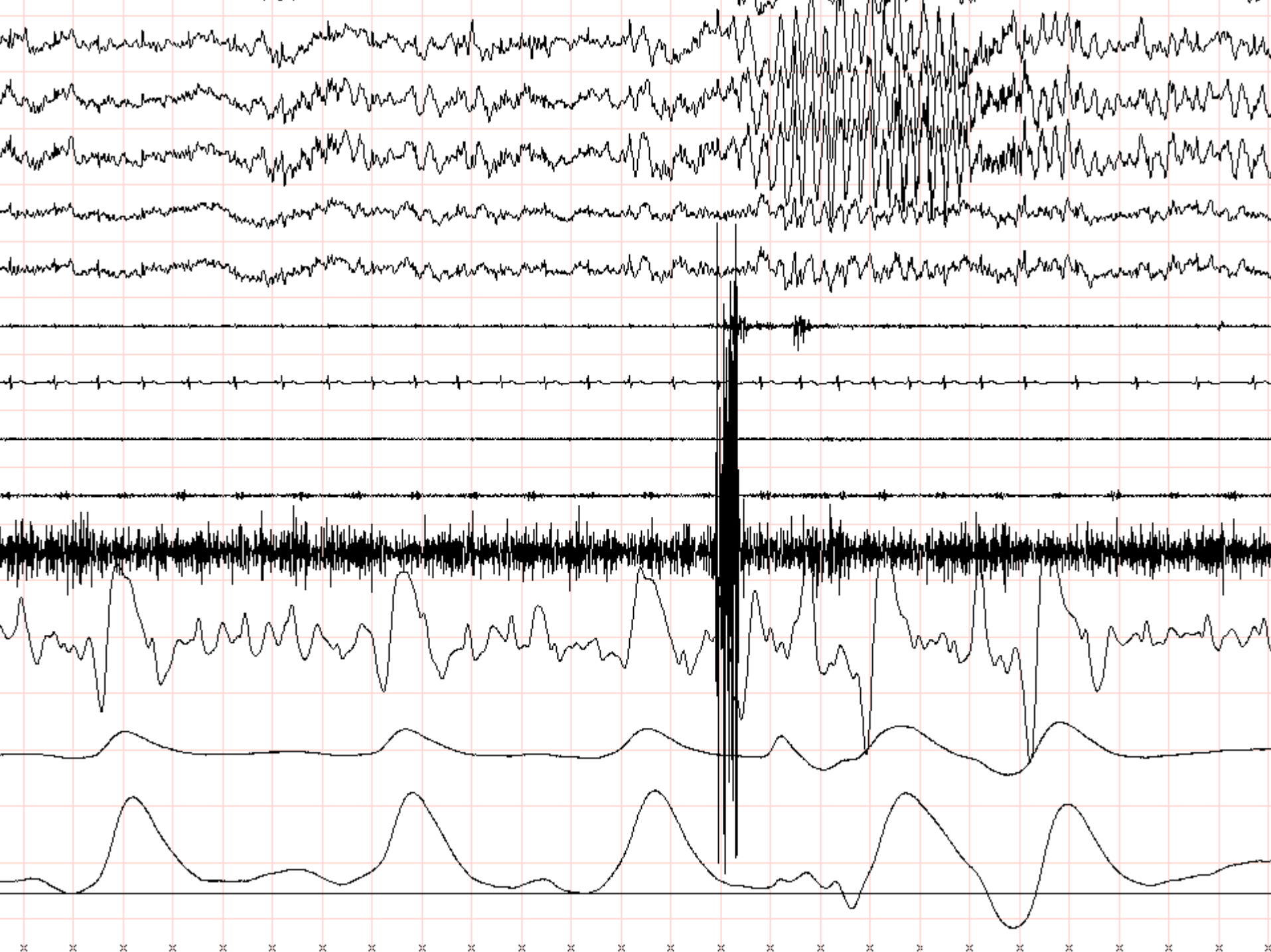
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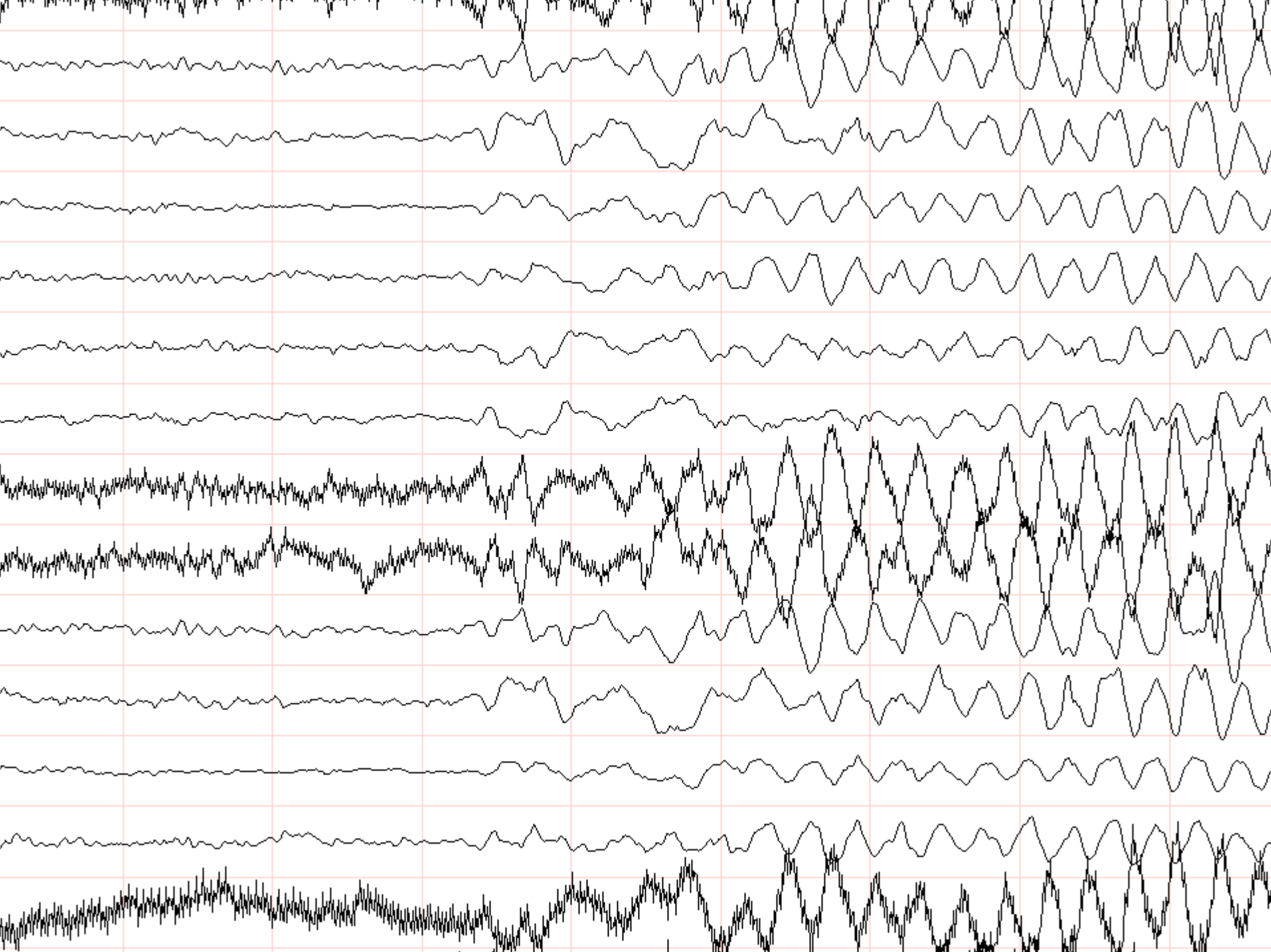
- Polysomnography confirmed adequate treatment of obstructive sleep apnea
- Sleep EEG: Abnormal discharges during stage I and light stage II sleep, but no movements captured
- On more detailed history taking, pt notes that he's had spells of "spacing out" for a few seconds since childhood, "though it was normal"

# Case 3: differential diagnosis

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- Variant of absence epilepsy
- Paroxysmal nocturnal dystonia
- Nocturnal frontal lobe epilepsy





# Case 3: treatment

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- Lamotrigine introduced and slowly titrated to 225mg qd
  - Significant improvement in daytime somnolence and in frequency of nocturnal behaviors
- Clonazepam 1mg qhs added
  - Further improvement in daytime somnolence