Disordered Sleep & Fatigue in Multiple Sclerosis

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Raman Malhotra has nothing to disclose.

Florian Thomas has nothing to disclose.

Dr. Thomas will discuss off-label use of the following commercial products:
- Amphetamines
- Modafinil
- Amorodafinil
- Caffeine
- Amantadine
- Methylphenidate
Learning Objectives

- Explain the multifactorial nature of disordered sleep & fatigue in MS
- Identify the types of medications that can affect sleep & cause fatigue
- Describe how sleep hygiene can improve fatigue
- Discuss the role of physical therapy in ameliorating fatigue
Sleep in America

- 1/3 of Americans report that they get less sleep than they need.
- 20% report that they never or rarely get a good night’s sleep.
- 50–70 million Americans have a chronic disorder of sleep or wakefulness.
Sleep Disorders & Fatigue in MS

- High Prevalence
- Under – diagnosed
  - Under – reported by Patients
  - Challenging differential Diagnosis
- Under–treated & “mis”–treated
  - At times iatrogenic
- Multifactorial
Causes of Lack of Energy unrelated to Sleep:

Intercurrent Illnesses

- Low B12, Folate
- Irregular Heart Beat
- Liver/Kidney Disease
- Medications
- Weakness due to MS
- Hormonal Imbalance
- Anemia
- Infection
- Fatigue
- Depression
- Neurogenic Bladder
Sleep Disorders & Fatigue in MS
Depression, Anxiety, Stress

- Abandonment
- Dependence
- Disinhibition
- Fear of Future
- Isolation
- Loss of Control
- Stigma
- Unemployment
- Anger
- Fear of Dating
- Anxiety
- Depression
- Embarrassment
- Loss of Social Status
- Poor Self-Image
- Fear of Treatment
Neurogenic Bladder & Sleep

- Frequent night-time urination disrupts sleep

- Options
  - Analyze the problem
  - Void/catheterize before going to sleep
  - Reduce evening fluid intake
  - Reduce caffeine intake
  - Judicious, evidence-driven medication use
Sleep Disorders & Fatigue in MS

Review of Systems

- Time to Bed? Time to Sleep?
- Sleep Hygiene?
- # Awakenings & Reasons?
- Nocturia? Snoring? PLMS? RLS?
- Depression? Anxiety? Stress?
- Pain? Spasms?
- Waking up refreshed?
- Daytime Sleepiness? Fatigue?
Types of Sleep Disorders

- Can’t sleep
  - Insomnia, Restless Legs Syndrome
  - Anxiety, Depression, Pain, Spasms
- Too much Sleep
  - Obstructive Sleep Apnea, Narcolepsy
- Sleep Deprivation
- Movement during Sleep
  - Periodic Limb Movement Disorder
  - REM Sleep Disorder
- Shift Work Disorder
Sleep Apnea

- Repetitive episodes of upper airway obstruction during sleep
- Causes oxygen desaturation
- Results in arousal
- Common
- Dangerous
- Easily recognized
- Treatable
Sleep Apnea: Consequences

◆ Irregular Heart Beat
◆ Cognitive Decline
◆ Work Accidents
◆ Car Accidents
◆ Heart Attack
◆ Diabetes
◆ Cancer
◆ Stroke
◆ Death
Sleep Apnea: Clinical Features

- Snoring (how loud+often?)
- Apnea (gasp/choking)
- Daytime sleepiness
- Tiredness/Fatigue
- Insomnia
- Poor Concentration
- Memory Problem
- Personality Changes
- Nighttime Urination
- Low Libido
- Acid Reflux
- Morning Headaches
- Night Sweats

Risk Factors
- Overweight
- Age >50
- Neck ≥16”
- Male
Sleep Study / Polysomnogram

Relax... Go to sleep... Pretend we're not even here.
Steps of a Sleep Evaluation

1. Initial sleep consultation in clinic
2. Review of sleep symptoms & other medical d/o
3. Selecting type of sleep testing
4. Review of results
5. Treatment (CPAP, BiPAP, other)
6. Monitor effectiveness of treatment
Overnight Polysomnogram
Gold Standard

- Sensor at nose to measure air flow
- Sensors on face and scalp to measure eye movement and brain activity
- Elastic belt sensors around chest and belly to measure amount of effort to breath
- Sensor on finger to measure amount of oxygen in blood
- Wires transmit data to a computer. A technician in a nearby room monitors the data.
Unattended Sleep Study at Home
Often acceptable
Sleep Apnea: Treatment

◆ Conservative
  ▪ Avoid alcohol/smoking
  ▪ Exercise
  ▪ Weight loss
  ▪ Positional therapy
    • Avoiding supine position
  ▪ Treat nasal congestion
Sleep Apnea: Treatment

- Positive Airway Pressure
  - Often Treatment of Choice
Sleep Apnea: Treatment

- **Positive Airway Pressure**
  - Difficult Adherence
    - 75%: Patient Report
    - 46%: Objective Use: 4 h x ≥5 nights/wk
Sleep Apnea: Treatment

- Alternatives to Positive Airway Pressure
  - PROVENT Nasal EPAP
  - Oral Pressure Therapy
Sleep Apnea: Treatment

◆ Oral Appliances
  - Move tongue downward/forward
  - Improve airway & tongue space
    • Tongue retaining
    • Palatal Lifting
Sleep Apnea: Treatment

✦ Surgery
  ◦ Uvulopalatopharyngoplasty
  ◦ Tongue Reduction
  ◦ Jaw Surgery
  ◦ Tracheotomy
  ◦ Hyoid Suspension
Sleep Hygiene

- Set a regular schedule
- Comfortable sleeping environment
- Avoid stimulants or other drugs before bedtime
- Avoid mental stimulation or stress before bedtime
Insomnia Definition

- Difficulty initiating sleep
- Difficulty maintaining sleep
- Early morning awakening
- Non-restorative/poor quality sleep
Insomnia
Consequences

- Fatigue or Malaise
- Daytime Sleepiness
- Tension Headaches
- Low Energy & Initiative
- GI Symptoms

- Poor Concentration, Attention or Memory
- Problems driving, at work or school
- Error Proneness
Insomnia Treatment

- Depends on underlying cause
- Pharmacological treatment
  - In select circumstances
- Non-pharmacological treatment
  - Improve sleep hygiene
  - Long term counseling is effective & safe, e.g. cognitive behavioral therapy
Restless Legs Syndrome (RLS) Definition

- Urge to move legs, in setting of uncomfortable sensation in the legs
- Worse during rest or inactivity
- Partially/totally relieved by movement
- Worse at night
- More frequent with age
- Affects 1/3 of all persons with MS
Restless Legs Syndrome
Treatment

- Warm Socks
- Massage
- Iron (when deficient)
- Dopamine Agonists
- Gabapentin
- Clonazepam
Periodic Leg Movement of Sleep (PLMS) Definition

- Repetitive limb movements in sleep
- Usually involves the legs
- Consists of sudden extension of the great toe with flexion at the ankle, knee, & hip
Periodic Leg Movement of Sleep
Differential Diagnosis

RLS
- Symptom
- Diagnosed in office
- 70% of RLS patients have PLMS

PLMS
- PSG finding
- Diagnosed in sleep lab
- 30% of PLMS patients have RLS
Periodic Leg Movement of Sleep Treatment

- Same as RLS
- Iron (when deficient)
- Dopamine Agonists
- Gabapentin
- Clonazepam
Heat Sensitivity in MS

- Uhthoff ↘ Vision/Power with Heat, 1890
  Effort and as Day goes on Better with Rest
- Rx AC, Timing of Activities
  Cooling Vest/Hat/Collar

Uhthoff W. Untersuchungen über die bei der multiplen Herdsklerose vorkommenden Augenstörungen. Arch Psychiatr 1890;21:305–412

Fatigue in MS

Characteristics

- Motor Tiredness, mental Fogginess, Lack of Energy
- Patients cannot engage in a Task for >few Hrs w/o Drop in Productivity or Sense of Well-Being
- Single most common Symptom
  - >75% affected
  - 30% 1st MS Symptom
  - <40% worst Symptom
  - Often Heat related
  - Same time every day

- Differential Diagnosis
  - Sleep Disorder, Hypothyroidism, Exhaustion,
  - Weakness, Depression, other medical Illness
Fatigue in MS
Treatment

- Assuming that a person has MS specific fatigue;
- Assuming that intercurrent problems are treated;
- Assuming that heat sensitivity is treated;
- Then use of stimulants is appropriate
  - Amantadine, Caffeine
  - Modafinil, Armodafinil
  - Methylphenidate, Dextroamphetamine
- Energy Conservation, Pacing
- Dalfampridine (to increase motor speed)
Sleep Disorders & Fatigue
Summary & Outlook

- Underdiagnosed & Undertreated: Why?
  - Challenge of symptom vs. sign-based diagnoses
    - “show me State” Fallacy
  - Challenge of the “New Normal”

- Challenge & Art of self-advocacy
  - Getting ~8 health care providers to communicate
  - “The squeaky wheel gets the grease”
  - “A successful patient knows how to get on the doctors’ nerves & feel good about it”

- Challenge of the Life Style Change
  - Sleep Disorder Rehab is long-term hard work