Disclosures

Relevant Financial Relationship(s)

None

Off Label Usage

None

Objectives

• Understand the implications of sleep disorders on health and well being in women
• Describe major differences in sleep disorders in women
• Formulate evaluation and management strategies for common sleep problems in women
Overview

Sleep disturbance is a threat to women’s health

- Sleep complaints are twice as prevalent in women (yet 75% of research is on men)
- 28-64% of perimenopausal/menopausal women report sleep disturbance
- Women suffer more brain damage from OSA than men but remain underdiagnosed

Why do we sleep?

- Memory consolidation and pruning
- Immune regulation
- Brain plasticity
- Restorative theory

Health implications of sleep disturbance

- Increased risk of:
  - Obesity/diabetes
  - Hypertension
  - Cardiovascular events
  - Stroke
  - Mood disturbance
  - Substance abuse
  - All cause mortality
  - Multiple studies
  - Troxel, Sleep 2010
Case
• 54 year old woman presents with sleep initiation and maintenance difficulties for the past few years.
• Progressive weight gain with snoring.
• Problems with depression.
• **PMHx:** Obesity, glucose intolerance, hypertension. Not on hormone replacement therapy.
• **PE:** BMI of 35, neck circumference of 16.5 inches, central obesity, mild retrognathia w/mallampati 4.

Insomnia

Insomnia Definition
• Repeated difficulty with sleep initiation, duration, maintenance, consolidation, or quality
• Occurs despite adequate time and opportunity for sleep
• Results in some form of daytime impairment
• More common in women then men
Insomnia

- Women are 40% more likely to experience insomnia than men.
- Hormonal status seems to play a major role.
  - Menopause/perimenopause
  - Late-luteal phase of the menstrual cycle
  - Third trimester of pregnancy
- Higher rates of depression, anxiety and other psychiatric disorders may contribute.
- Chronic insomnia prevalent among cancer patients, especially women with breast cancer.

Treatment of Insomnia

- Screen for and treat primary sleep disorders
- Psychological and behavioral interventions
- Pharmacologic treatment
- Behavioral specialist if significant mood disorder
- Naturopathic agents (?)

Obstructive Sleep Apnea
Obstructive Sleep Apnea
• Definition: Repetitive partial or complete collapse of the upper airway during sleep
• Associated conditions
  - Obesity
  - Cardiovascular disease
  - Stroke
  - Diabetes
  - Mood disturbance
  - Neurocognitive dysfunction
  - Motor vehicle accidents

OSA Risk Factors
• Obesity
• Advancing age
• Male gender
• Menopause
• Craniofacial/upper airway abnormalities
• Nasal congestion
• Smoking
• Family history
• Pregnancy
• Other medical conditions: End stage renal disease, congestive heart failure, chronic lung disease, stroke

OSA in Women
• Sleep apnea is underdiagnosed in women (Wisconsin Sleep Cohort Study)
• Women are 2-3 times less likely than men to report classic OSA symptoms
• Women are more likely to be treated inappropriately than men with the same severity of OSA
Symptomatology

- **Classic symptoms more often reported in men:**
  - Loud snoring
  - Breathing pauses
  - Excessive daytime sleepiness

- **Atypical symptoms more often reported in women:**
  - Insomnia (20%)
  - Morning headache
  - Fatigue
  - Depression and anxiety
  - Memory loss
  - Poor concentration
  - Decreased libido
  - Irritability

Physical Exam

- BMI > 30, large neck size (>16 inches or 40 cm)
- Hypertension
- Structural abnormalities of the oropharynx
  - Retrognathia
  - Macroglossia
  - Uvula elongation
  - Narrowing
  - High arched palate
  - Nasal septal deviation
  - Elevated Mallampati score

Diagnosis of OSA

- Screening overnight oximeter
- Polysomnography
Treatment of OSA

- Positive airway pressure therapy (PAP)
  - Compliance always a challenge
  - 65-83% in one study, same between sexes
  - Prospective study: female patients used CPAP more
- Behavioral therapy
  - Positional therapy
  - Weight reduction
  - Alcohol and sedative avoidance
  - Smoking cessation
- Oral appliances
- Surgical therapy

Outcomes

- Most treatment trials have been conducted in male patients
- Few trials have included enough women to define differences in efficacy of various modalities
- White matter structural integrity appeared more affected in female OSA patients compared to male patients (Macey, Sleep 2012)...OSA may be more problematic and need earlier treatment in women.

Willis-Ekbom Disease

(Restless Leg Syndrome)
Diagnosis

- Urge to move the legs, usually (but not necessarily) accompanied by dysesthesias
- Predominance of symptoms during evening or night hours
- Presence of symptoms during rest or inactivity such as sitting or lying
- Improvement of symptoms with movement, such as stretching or walking

Prevalence of RLS

- Prevalence around 14% in women (6% in men)
- Increases with age
- 80% will have periodic limb movements of sleep
- Etiology not clearly understood but believed to be dopaminergic dysfunction
  - Iron dopamine hypothesis

Risk Factors for RLS

- Iron deficiency
- Pregnancy
- Antidepressants
- Neuropathy
- Kidney disease
- Caffeine
- Alcohol
- H2 blockers
- Smoking
- Family history
Implications of RLS

- Reduced quality of life
- Increased morbidity and mortality
- Positive correlation between RLS and CAD in a prospective study (Li, Circulation 2012)

Treatment of RLS

- Nonpharmacologic treatment
- Replace iron if ferritin is low (<50mcg/L)
- Pharmacologic treatment
  - Dopamine agonists (pramipexole/ropinirole, rotigotine)
  - Anticonvulsants (gabapentin, pregabalin, carbamazepine)
  - Dopamine precursors (carbidopa/levodopa)
  - Benzodiazepine receptor agonists (Clonazepam or “z” medications)
  - Clonidine
  - Opioids

Pregnancy
Sleep Disturbance in Pregnancy

- Sleep disorders may be exacerbated by or occur only during pregnancy
- 78% of women report more disturbed sleep during pregnancy
- Changes in reproductive hormones along with physical changes in the body lead to sleep problems

Sleep Disturbance in Pregnancy

- Insomnia
- Discomfort
- GERD (30-50%)
- Nocturia
- Anxiety
- RLS
  - Worsens thru pregnancy
  - 26% report symptoms
- Sleep disordered breathing
  - OSA and/or hypoventilation
  - Associated with preeclampsia, lower birth weight/apgars

Perimenopause/Menopause
Sleep Disturbance in Perimenopause/Menopause

- 2005 NIH panel reported sleep disturbance as a key perimenopausal symptom
- Menopause showed a negative effect on sleep
  - Longer sleep latency
  - Less deep sleep
  - Higher prevalence of OSA
  - Vasomotor symptoms

Sleep Disturbance in Perimenopause/Menopause

- Busy lifestyle
  - Family demands
  - Work demands
- Stress exposure
  - Aging parents
  - Death of family/friends
  - "Empty nest syndrome"
    - Akerstedt et al, J Psychosom, 2002

Sleep Disturbance in Perimenopause/Menopause (cont’d)

- Hot flashes
- Estrogen and Progesterone
- Mood changes
- Primary sleep disorders
  - Obstructive sleep apnea
  - Restless leg syndrome
  - Nowakowski, Curr Neurol Neurosci Rep, 2009
Back to the case…

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Recommendations

- Do a screening oximeter or refer to a sleep specialist for further evaluation of suspected OSA
- Recommend weight loss and exercise
- Consider hormone replacement therapy
- Nonpharmacologic treatment of insomnia
  - CBT, sleep hygiene education, relaxation techniques
- Consider a trial of sedative hypnotic
- Referral to a behavioral specialist if persistent mood disturbance

Summary

- Sleep is extremely important to the health and well being of women.
- Evaluating and treating sleep problems often involves a multidisciplinary approach.
- Primary sleep disorders tend to be underdiagnosed in women with potential for serious consequences.
Thank You

Lloyd.robin@mayo.edu

Recommended Reading
