More Than a Snore: Causes, Treatment and Risks of Sleep Apnea

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Objectives

• Review the “Who, What, Where, Why” of Obstructive Sleep Apnea
• Discuss untoward effects of sleep apnea on our general health and daytime functioning
• Review diagnostic testing and treatment options
Why is Everyone Talking About Sleep Apnea?
Nothing New

• The object that presented itself to the eyes of the astonished clerk, was a boy—a wonderfully fat boy—habited as a serving lad, standing upright on the mat, with his eyes closed as if in sleep.

• “Sleep!” said the old gentleman, “he’s always asleep. Goes on errands fast asleep, and snores as he waits at table.”

– Pickwick Papers - 1837
Timeline

- 1889-1897 Caton and Lamacq described excessive sleepiness caused by intermittent upper airway obstruction during sleep
- 1907 The term "pickwickian" was introduced by Osler to refer to obese and sleepy individuals
- 1936 Kerr and Lagen reported cardiovascular and pulmonary consequences of obstructive sleep apnea
- 1976-78 Guilleminault, Lugaresi outlined the essential clinical framework of the disorder
- 1981 Nasal CPAP is introduced
Where We’re At Now

- Medical Knowledge
  - Clinical knowledge and Training
- Technical Ability
- Increasing Risk
Who

- Sleep apnea occurs in all age groups
- In a random sample of employed Americans aged 30 to 60 years, 9% of women and 24% of men had apnea-hypopnea index scores of 5 or higher
- Two percent of women and 4% of men in the sample had five or more respiratory events per hour of sleep and complaints of daytime sleepiness
- The incidence of OSAS in children is 1% to 3%
Shaquille O’Neal

- 2014 College Basketball Hall of Fame inductee
- LSU – first team All-American in last two seasons
- 3 time championship winner with the LA Lakers, 4th championship with Miami Heat
What

- **Obstructive**
  - Apneas – complete blockage
  - Hypopneas – partial blockage leading to an awakening or oxygen desaturation
  - Upper airway resistance syndrome – partial blockage

- **Non-obstructive**
  - Central sleep apnea
What

- The total number of apnea and hypopnea episodes per hour of sleep is called the apnea-hypopnea index (AHI)

- Obstructive Sleep Apnea Syndrome: AHI of 5 or higher with daytime complaints (sleepiness, disrupted sleep, other sleep-related difficulties)
Where

- Narrowing or occlusion of the upper airway during sleep.
- The site of occlusion varies
  - In some patients, the occlusion may be at more than one level or at different sites during different stages of sleep, owing to differential activity of muscles involved in maintenance of airway patency.
Why

• Obesity is the most common associated sign, but anatomical abnormalities of the upper airway are considered the most important risk factor for sleep disordered breathing
  – 1/3 of pts with OSA are *not* overweight
• Neck size >16.5 inches
Why

• Other risk factors
  – Small/narrow jaw or midface
  – Tonsil size
  – Tongue size
  – Low muscle tone
  – Male gender
  – Age
  – Smoking
TONSIL SIZE: TONSIL SIZE IS GRADED FROM 0 TO 4.

0  Surgically removed tonsils.
1  Tonsils hidden within tonsil pillars.
2  Tonsils extending to the pillars.
3  Tonsils are beyond the pillars.
4  Tonsils extend to midline.

FRIEDMAN TONGUE POSITION: TONGUE POSITION IS BASED ON MOUTH STRUCTURES WITH MOUTH WIDELY OPEN WITHOUT TONGUE PROTRUSION.

I  Entire uvula and tonsils are visible.
II  Entire uvula visible, but tonsils are not visible.
III  Soft palate is visible, but not the uvula.
IV  Only hard palate is visible.

Clinical Presentation

- Snoring
- Excessive daytime sleepiness
- Uninterrupted but non-restorative sleep
- Fragmented sleep
- Bed partner
  - loud snoring with snorts and gasping or choking sounds
  - restless sleep, frequent position changes
  - apneic episodes (pauses in breathing)
Clinical Presentation

- Irritability, depression
- Memory, concentration difficulties
- Morning headaches
- Nocturnal enuresis (bedwetting)
- Impotence or reduced libido
- Nocturnal heartburn
- Heavy nighttime sweating
Diagnosis

• Attended Polysomnogram (Sleep Study)
  – Polygraph of EEG, eye movements, electromyography readings, oxygen saturation, limb movements, airflow, and chest and abdominal movements taken during sleep

• Out of Center Sleep Test (Home Sleep Study)
  – Cardiopulmonary monitors recording airflow, respiratory effort and oxygen saturation
Attended Sleep Study
Home Sleep Testing
Diagnosis

• Apnea Hypopnea Index:
  – AHI <5 = normal
  – AHI 5-15 mild
  – AHI 15-30 moderate
  – AHI >30 severe
Consequences

- Sleep Apnea
- Hypertension
- Obesity
- Drowsiness
- Fatigue
- Impotence
- Diabetes
- Motor Vehicular Accident
- Job Impairment
- Arrhythmia
- Heart Attack
- Headache
- Lung Hypertension
- Stroke
- Dementia & Memory Loss
Consequences

• ~ 2 – fold increased risk for
  – High blood pressure
  – Heart attack
  – Stroke

  – Snoring and EDS had an age adjusted total death rate which was 2.7 times higher than men with no snoring or EDS
Why is that?
How (do we treat)?

- Weight loss
- Positive Airway Pressure (PAP) therapy
- Oral Mandibular Advancement Devices
- Surgical Intervention
- Positional devices
- Other
What (Generally) Doesn’t Work?

• Breathe Right® strips
• Over-the-counter oral appliances for snoring
• Herbals/Aromatherapy
PAP

- PAP functions primarily as an air splint to maintain an open upper airway
  - Is effective in approximately 80% to 90% of patients and can be used successfully in infants and children, as well as adults.
  - CPAP = continuous positive airway pressure
  - BPAP = bilevel positive airway pressure
PAP

• Humidity
• Different mask styles/fits
• Variable pressure setting options
Oral Appliances

• Advance or keep in place the lower jaw
• Prevents posterior placement of the tongue
Oral Appliances
Surgery

- Uvulopalatopharyngoplasty (UPPP)
Surgery

- Maxillo-Mandibular Advancement
Positional Devices
Other

- Provent
Future

• Hypoglossal nerve stimulation
Conclusions

• Obstructive sleep apnea is a common condition which contributes to significant morbidity and mortality
• Our understanding of and screening for this condition continues to improve
• It is treatable, and treatment improves health and daytime functioning
Our Center

• Vermont Regional Sleep Center  
  AASM Accredited  
  – Clinic  
    • University Health Center  
  – Sleep Studies  
    • Main Hospital Campus  
    • Sheraton Hotel
Our Team

- 5 physicians
- Sleep psychologist
- Nurse
- 12 sleep technologists
- 3 practice support specialists