



Stroke and Obstructive Sleep Apnea

Primary Care Stroke Update

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Disclosure of Potential for Conflict of Interest
Primary Care Stroke Update: What's New in Best
Practice Prevention & Care
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DISCLOSURE:
No conflicts of interest.



Objectives

- **Obstructive Sleep Apnea (OSA)**
- **Physiology**
- **Discuss link between OSA and Stroke**
- **OSA screening tools**
- **Treatment**

Obstructive Sleep Apnea (OSA)

- **Cyclic collapse of upper airway during sleep**
- **Cessation of airflow with hypoxemia or hypercapnia**
- **Can result in arousal which terminates the event**
- **AHI (Apnea/hypopnea index)**
 - AHI < 5 (normal)
 - AHI 5 -15 (mild)
 - AHI >15 - 30 (moderate)
 - AHI > 30 (severe)

Epidemiology

- **Affects 2-15% of middle aged population**
- **24% men 9% women**
- **>80% untreated/undiagnosed**
- **60% OF STROKE PATIENTS**

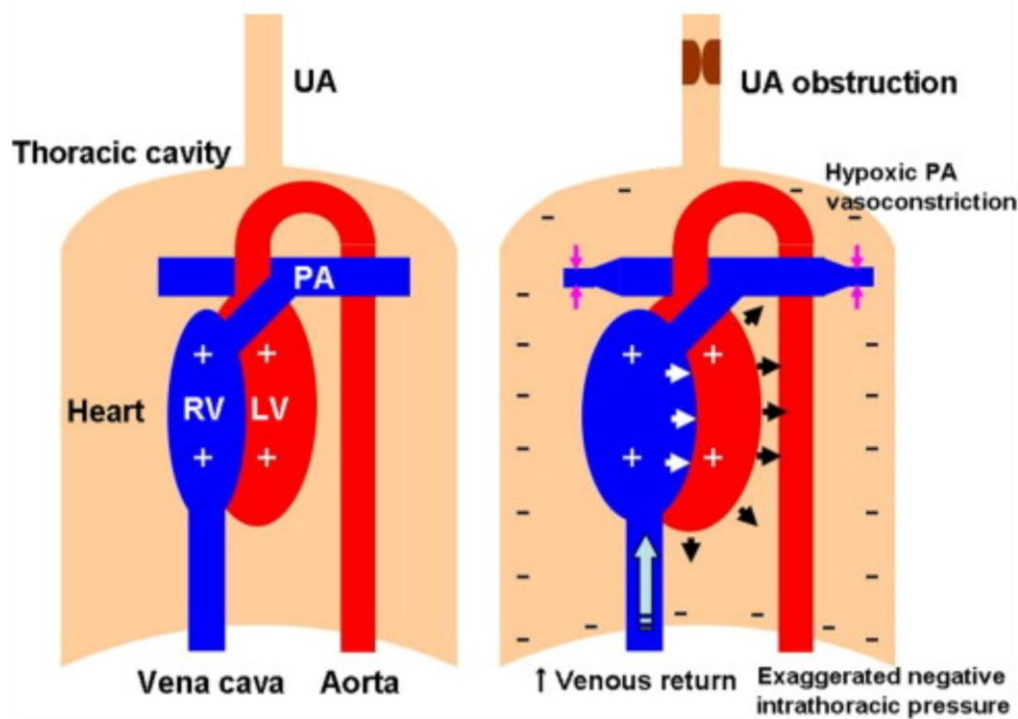


Video 1



From: Obstructive Sleep Apnea and Heart Failure: Pathophysiologic and Therapeutic Implications

J Am Coll Cardiol. 2011;57(2):119-127





- **OSA**

- Obesity
- HTN
- Cardiac arrhythmia
ex: Atrial fibrillation
- CHF
- Family history

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- CHF
- Diabetes
- Hypercholesterolemia
- Smoking
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- **OSA**

- HTN
- Atrial fibrillation
- CHF
- Insulin resistance
- Hypercoagulability



STROKE



Untreated OSA Increases Stroke Risk...

- **By how much?**
 - It doesn't!
 - 4x
 - 10x
 - 20x

Untreated OSA Increases Stroke Risk...

- **By how much?**
 - It doesn't!
 - **4x**
 - 10x
 - 20x
- **Compared to pts with AHI<5**
- **3x increased risk of MI**
- **CPAP Treatment reduces risk by 60-70% (NNT 3.5)**



What is the most effective treatment for resistant hypertension in OSA patients?

- Beta blockers
- ACE inhibitors
- CPAP
- Alpha blockers

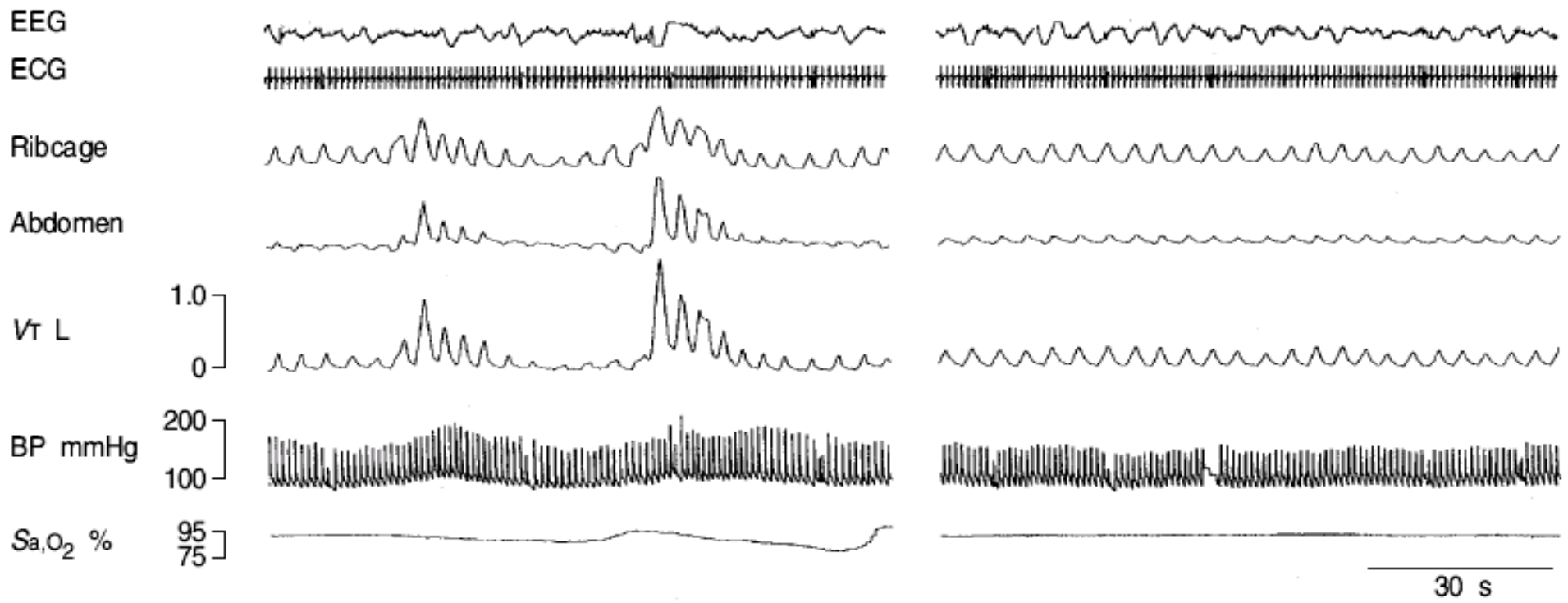
What is the most effective treatment for resistant hypertension in OSA patients?

- Beta blockers
 - ACE inhibitors
 - **CPAP**
 - Alpha blockers
-
- **Correlation INDEPENDENT of other comorbidities**
 - **TREATMENT of OSA can lower BP in patients with resistant HTN**



Off CPAP

On CPAP





Which of these cardiac arrhythmias occurs as a result of OSA?

- Paroxysmal atrial fibrillation
- Non-sustained ventricular tachycardia
- Premature atrial complex
- Sinus bradycardia
- Sinus pauses
- Premature ventricular complexes



Which of these cardiac arrhythmias occurs as a result of OSA?

- Paroxysmal atrial fibrillation
- Non-sustained ventricular tachycardia
- Premature atrial complex
- Sinus bradycardia
- Sinus pauses
- Premature ventricular complexes
- Increased sympathetic tone
- Increased risk of nocturnal death
- Increased risk of death overall (4x)

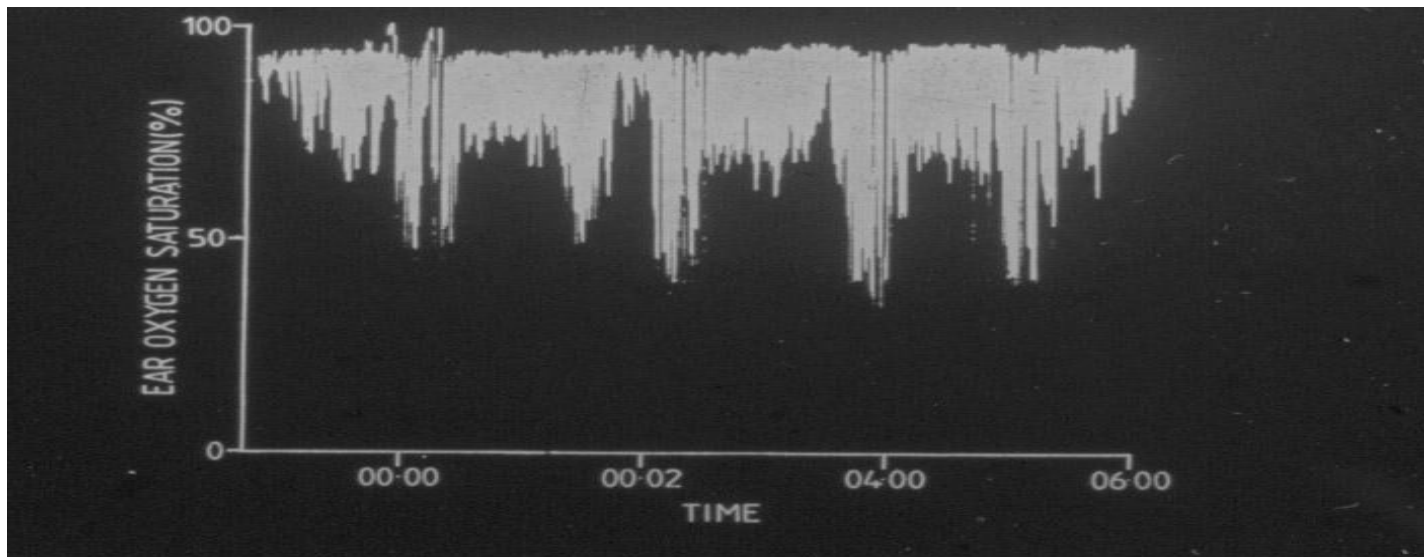


Screening for OSA

- **Questionnaires**
 - STOP / STOP-Bang
 - Berlin Questionnaire
 - Wisconsin Sleep Questionnaire
- **Clinical history**
 - Bed partner has heard snoring/witnessed apnea
 - Bed partner has left the room!
 - Day time somnolence
 - Nocturia
 - Waking with a feeling of choking/gasping

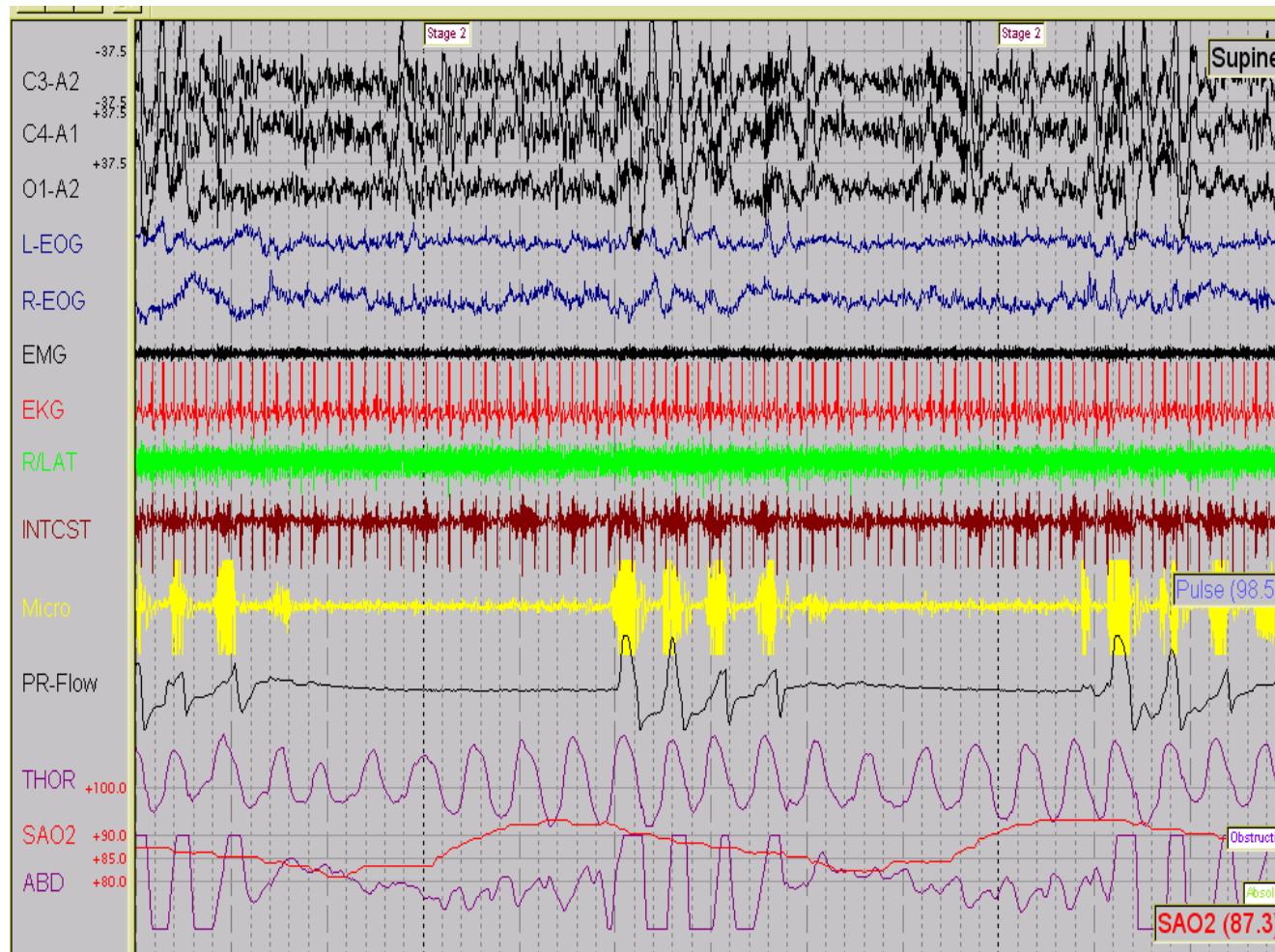


Screening Tools: Overnight Oximetry





Polysomnography (Overnight Sleep Study)





Treatment

- **2" x 4" under head of the bed**
- **Positional treatment**
 - Rematee Bumper Belt



Treatment

- **2" x 4" under head of the bed**
- **Positional treatment**
 - Rematee Bumper Belt
 - Football in children's backpack
- **Breathe Right Nasal Strips**
- **Provent nose plugs**
- **Oral appliance**
- **Surgical alteration of soft palate**





Treatment

- **CPAP**



C-CAT



Conclusion

- **OSA is an independent risk factor for:**
 - Stroke
 - HTN
 - Cardiac arrhythmia
- **Can be screened for**
- **Treatment reduces stroke risk by 60-70%**
- **Reduces systolic and diastolic blood pressure**
- **Reduces risk of sudden death**



Questions?

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