PEDIATRIC SLEEP DISORDERED BREATHING

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SLEEP DISORDERED BREATHING (SDB)

- **Primary Snoring**: habitual snoring not associated with oxygen desaturation or arousals from sleep

- **Upper Airway Resistance Syndrome (UARS)**: increases in negative intrathoracic pressure and arousals from sleep not generally associated with oxygen desaturation or airflow restrictions

- **Obstructive Sleep Apnea (OSA)**: repeated episodes of nocturnal airflow restriction (hypopneas) or obstruction (apneas) in association with arousals from sleep, oxygen desaturation, and possible hypercapnia
SDB - MORBIDITY

- **OSA**: failure to thrive, systemic hypertension, cor pulmonale, left ventricular hypertrophy
- **All SDB**: daytime somnolence, behavioral changes, poor school and cognitive performance, and decreased quality of life
  - Use of standardized and validated instruments to measure QOL, behavior, and cognition along with PSG
EVALUATION

• History:
  – Snoring
  – Restlessness/awakenings/enuresis
  – Apnea
  – Daytime somnolence (DTS), cognitive or behavioral issues
  – Nasal obstruction, mouth breathing, rhinitis, chronic rhinosinusitis
  – Weight gain, obesity
EVALUATION

• General appearance
  – Obesity
• Respiration
  – Stertor
  – Mouth breathing
• Craniofacial exam
  – Syndromes
  – Retrognathia
  – “Adenoid Facies”
COMPLETE NASAL EXAM

• External deformities
• Nasal septal deviation
• Inferior turbinates
• Rhinitis
• Purulent rhinorrhea
ORAL CAVITY EXAM

Courtesy of: Lin and Koltai, 2009
EVALUATION

• If exam is unrevealing:
  – Adenoid evaluation
    • Lateral neck soft tissue x-ray
    • Flexible fiberoptic endoscopy
  – Flexible fiberoptic endoscopy
    • Base of tongue and lingual tonsils
    • Hypopharynx
    • Larynx
LATERAL NECK SOFT TISSUE X-RAY
FIBEROPTIC LARYNGOSCOPY
EVALUATION – POLYSOMNOGRAPHY?

- Polysomnography recommended for ALL children with suspicion of OSA
  - Distinguish primary snoring from OSA
- If positive, consider:
  - Videotaping
  - Nocturnal pulse oximetry
  - Daytime nap studies
MILD SDB vs. OSA

MORBIDITY SAME:
- DTS
- Behavioral changes
- Poor school and cognitive performances

OUTCOME FOLLOWING T AND A:
- Significant improvements in both groups

NEED TO DISTINGUISH MILD SDB FROM OSA?

Mitchell and Kelly, Laryngoscope 2007
EVALUATION – POLYSOMNOGRAPHY?

• Lack of correlation between current measurements of SDB (PSG parameters) and clinically relevant outcomes
  Garetz, OtoHNS, 2008

• 75% of otolaryngologists order PSG on <10% of children with obstructive symptoms prior to T and A
EVALUATION – POLYSOMNOGRAPHY?

• Healthy children
  – Snoring, restlessness, daytime symptoms, poor cognitive performance (+/- apnea)
  – Adenotonsillar hypertrophy
  – T and A without PSG

• Preoperative PSG:
  – Medical comorbidities
  – Age <3 years
  – Small tonsils and adenoids
  – Physical findings don’t correlate with degree of airway obstruction

Yellon, Laryngoscope 2010
TREATMENT

- Weight loss
  - Pediatric Fitness Clinic
- Nasal steroid
- Nasal saline
- Allergy referral
- GERD treatment
- “Home sleep study”
ADENOTONSILLECTOMY

• Numerous studies with standardized, validated instruments to measure QOL, behavior, and cognition along with PSG:
  – Documented improvement in >1 outcome
  – (Review, Garetz, OTO HNS 2008)

• Normalization of PSG parameters in 82.9%
  – (Meta-analysis, Brietzke OTO HNS, 2006)
  – Effectiveness may be greater due to limited correlation of PSG and clinically relevant outcomes in some
Obesity is a negative predictor of surgical outcome.

BMI > 95% and OSA:
- Improvement in QOL in both general and domain scores
- Lack of resolution of OSA in majority
- Post treatment PSG and ancillary treatment

Mitchell and Kelly OTO HNS, 2004
TREATMENT

• Nonsurgical:
  – Mandibular advancement oral appliance
  – CPAP

• Surgical:
  – Lingual tonsillectomy
  – Tongue suspension procedures
  – Supraglottoplasty
  – Tracheostomy
SUMMARY

• SDB is common in children
• Both mild and severe SDB carries significant morbidity and should be treated
• Preoperative PSG generally not needed, but useful in select cases
• Adenotonsillectomy remains an effective treatment, but some patients will require additional medical or surgical intervention
Thank you