Sleeping for Two: Sleep Disorders and Disturbance in Pregnancy

Janet Beardsley, MSN, CNM, ANP-C
Central Maine Pulmonary and Sleep Medicine
Sleep Disorders in Pregnancy

What are some of the sleep disturbances which are commonly seen in pregnancy?:

Sleep Disordered Breathing (increased snoring and OSA)
Restless Leg Syndrome (exacerbation and new onset)
Insomnia (over 50% of pregnant women met criteria for this diagnosis at the end of pregnancy)
Sleep deprivation (sleep duration decreases have been found in multiple studies, rising estrogen decreases REM while progesterone decreases NREM.)
Prevalence of Sleep Disordered Breathing in Pregnancy

The incidence of habitual snoring increases in pregnancy, affecting 10-35% of pregnant women during the third trimester. (Izci-Balserak and Pien, 2010, Pamidi et al., 2014)

Obstructive sleep apnea rates rise to 11-20% of pregnant women, with the highest rates seen in obese women. (Louis et al., 2014)
Physiologic changes in pregnancy which increase the risks of SDB:

- Increasing weight gain
- Increased edema and mucus production in the nasopharyngeal passages
- Upper airway narrows in the third trimester (returns to baseline postpartum)
- Increased arousals from sleep
- Decreased functional reserve capacity decreases 10-20% at term

(Madappa, 2013, Izci et al., 2006)
Other Sleep Disruption in Pregnancy

Fatigue: can cause excessive daytime sleepiness, especially in the first trimester. This causes our usual screening tools to be less accurate for assessing SDB.

Nocturia: due to increased pressure from the enlarged uterus/decreased room for the bladder.

Discomfort: from strain on muscles and ligaments, increased weight, fetal position and growth, musculoskeletal changes in pregnancy.

Increased nocturnal GERD due to lower esophageal sphincter relaxation.

Restless Legs: increased rate and severity, possibly due to iron demands in pregnancy and estrogen levels.

Sleep Interruption: from external sources, such as other children.
Consequences of Sleep Disruption in Pregnancy

Sleep deprivation alone can increase the risk of preterm delivery and postpartum depression. (Chang et al. 2010)

Multiple studies have found a correlation of sleep apnea with gestational diabetes and preeclampsia.

Increased rates of NICU admissions seen after delivery in pregnancies with OSA.
Gestational Diabetes and Sleep Disruption

Short sleep duration alone may also increase insulin resistance. (Izci-Balserak and Pien, 2010)

The relationship between OSA and GDM is highly associated with a pre-pregnancy BMI greater than 35. (Bisson et al., 2014)

In a recent study, close to 75% of women with GDM has PSG positive OSA. When adjusted for pre-pregnant BMI, the women with GDM were 7 times more likely to have OSA on polysomnogram. (Reutrakul et al., 2013)
Hypertension, Preeclampsia and Sleep Apnea

A recent large review of the National Inpatient Sample Database from 1998-2009 found a correlation of OSA with preeclampsia, eclampsia, cardiomyopathy and pulmonary embolism, after controlling for BMI.

Pregnant women with OSA had a greater than five-fold increase risk for in-hospital maternal mortality, even after adjustment for comorbid conditions.

Sleep Disordered Breathing, independent of BMI, is associated with gestational hypertension and pre-eclampsia

(Louis et al., 2014; Haney, Buysse and Okun, 2013)
Newborn Consequences of Sleep Apnea in Pregnancy

Some studies are finding an increased risk of NICU admissions and unplanned cesarean section. Preterm delivery has been associated with sleep deprivation and sleep apnea.

Growth restriction has been seen in some studies, but not others.

(Bourjeily et al., 2010)
Diagnosing Sleep Disordered Breathing in Pregnancy

Timing is everything!

SDB risk increases in the third trimester

This is a narrow window of 12 weeks to diagnose and treat

In-lab polysomnogram testing has been validated in the pregnant population, but recently the Watch-PAT 2000 and ARES Unicorder have also been validated against in lab PSG.

Screening tools commonly used in the non-pregnant population are not as effective in pregnant women. (Facco et al., 2012; Antony et al., 2014; Louis et al., 2012)
Screening Tools

The Berlin Questionnaire and Epworth Sleepiness Scale are poorly predictive of a positive test for OSA in pregnancy.

Several studies have suggested the a combination of snoring with elevated BMI increases predictive value. The addition of a history of chronic hypertension and age also increased sensitivity and specificity of screening.

(Olivarez et al, 2010; Facco et al., 2012; Antony et al., 2014)
In lab polysomnogram is the gold standard for sleep testing in pregnancy. Multiple studies have used out of center sleep testing to evaluate for sleep disordered breathing in pregnancy. Some out of center testing has been validated in pregnancy, with generally small sample sizes. AASM Guidelines recommend out of center testing only in populations with “substantive data” validating sensitivity and specificity.
Timing in Pregnancy

Identification of at risk individuals in early pregnancy
This is similar to how prenatal providers screen for gestational diabetes, often with an early screen around 18 weeks of gestation.

Snoring, BMI>35, age, and preexisting hypertension have been suggested as criteria for early screening in pregnancy.

Family history of sleep apnea might also be considered, as well as a personal history of gestational diabetes or preeclampsia.
Treatment Options for Sleep Disordered Breathing in Pregnancy

Positional changes, lateral sleep

CPAP: for a newly diagnosed woman this is fast and effective.

Early CPAP use in women with snoring and HTN may improve blood pressure control throughout pregnancy. (Poyares et al., 2007)

Initiation of CPAP after onset of preeclampsia may decrease blood pressure. (Edwards et al. 2000)

Women already using CPAP should be monitored more frequently during pregnancy and adjustments made as needed.
Restless Leg Syndrome/Willis Ekbom Disorder

RLS is 2-3 times more prevalent in pregnancy than in the general population. Symptoms increase in the third trimester and typically taper to baseline by one month postpartum. Women with a past history of RLS or a family history are at increased risk of developing symptoms in pregnancy. Hemoglobin < 11 g/DL can also increase risk of developing symptoms. Symptoms for women with a past history are often severe.
Treatment for Restless Legs in Pregnancy

Narcotics
Carbamazepine
Gabapentin
Some benzodiazepines
NONE OF THESE ARE GREAT CHOICES!

Non-pharmacologic interventions: stretching, elastic stockings

Ruling out and treating iron deficiency should be front line in assessment and intervention.
Care of the Pregnant Patient in the Sleep Lab

Pregnant woman are at risk for Supine Hypotensive Syndrome during the third trimester, which will decrease placental blood flow.

Semi-Fowlers or lateral positioning is recommended and fully supine sleep should be avoided in the third trimester.

However, “hip tilt” with a pillow is sufficient to decrease the incidence.
Sleep disorders and their effects on pregnancy are often not well known in the Obstetrical and Midwifery community, and pregnancy is often not discussed within sleep medicine.

Educational opportunities can occur through grand rounds, Journal club’s, and “Lunch and Learn” sessions between the two departments.

Collaborating with the prenatal providers is critical, to work towards decreased wait time, utilizing rapid screening. Use of home sleep testing, with rapid computerized assessment may enable timely intervention.
References: Sleep Disorder Breathing in Pregnancy


References: Gestational Diabetes


Reutrakul et al. Sleep Apnea and Gestational Diabetes J Clin Endocrinol Metab, October 2013, 98(10):4195–4202

Reutrakul et al. Sleep Disturbances and Their Relationship to Glucose Tolerance in Pregnancy. Diabetes Care, Nov 2011 vol 34:2454-2457
References: Gestational Hypertension


References: Restless Leg Syndrome

References: Sleep Deprivation


References: Screening Tools

A Goodnight of Sleep Takes More Than Just Counting Sheep!
Thank You.