

Snoring in pregnancy was associated with pregnancy-induced hypertension and growth retardation of the fetus

Franklin KA, Holmgren PA, Jönsson F et al. **Snoring, pregnancy-induced hypertension, and growth retardation of the fetus.** Chest. 2000; 117:137-141.

Question

What is the relationship between self-reported snoring and pregnancy induced hypertension and growth retardation of the fetus?

Design

Retrospective, cross-sectional, consecutive case series

Setting

A University Hospital in Sweden

Participants

518 consecutive women presenting on the day of delivery. Inclusion criteria were singleton women with vaginal deliveries. Sixteen women did not complete the questionnaire

Assessment of risk factors

Questionnaire administered by 4 midwives. The women, usually accompanied by a partner were asked:

1. Rate snoring frequency before pregnancy (never, seldom, sometimes, often, always)
2. Rate snoring during the last week before delivery (never, seldom, sometimes, often, always)
3. Time during pregnancy when snoring started
4. Did you experience excessive daytime sleepiness during the pregnancy (yes, no)
5. Questions regarding smoking, medications, concomitant disease, and witnessed sleep apneas by partner

Main outcome measures

1. Blood pressure-blood pressures taken from patient's medical chart (recorded at weeks 8-10, 12, 25, 28, 31, 33, 35, 37, 39 and 41)
2. Edema – Rated 0-3
3. Body weight-recorded before delivery
4. Infant data
 - Birth weight, length, sex, head size
 - Apgar score at 1 and 5 minutes

Definitions

1. Pregnancy induced hypertension – repeated BP recordings > 140/90 appearing during the pregnancy

2. Preeclampsia – pregnancy induced hypertension with proteinuria > 0.3g/24h
3. Growth retardation – infant birth weight below 2 SD for gestational age
4. Habitual snorers – snoring frequency rated as often or always at the day of delivery

Main results

1. Snoring frequency increased during pregnancy (from 4% to 23%, $p < 0.001$).
2. Habitual snorers were twice as likely to have pregnancy-induced hypertension even when controlled for weight, age and smoking habits (odds ratio=2.03, $p < 0.05$).
3. Snorers tended to have more preeclampsia when controlled for weight, age and smoking habits (odds ratio=2.18, $p = 0.07$).
4. Edema was more common in habitual snorers as compared with non-habitual snorers (52% versus 30%, $p < 0.001$).
5. Excessive daytime sleepiness was common (65% of the women) but was not associated with frequency of snoring.
6. Habitual snorers were more likely to have a baby with growth retardation than nonhabitual snorers after adjusting for weight, age and smoking (odds ratio=3.45, $p < 0.01$).
7. An Apgar score less than or equal to 7 was more common in infants born to habitual snorers than in infants born to nonhabitual snorers ($p < 0.01$).

Conclusions

Snoring is common during pregnancy and is associated with pregnancy induced hypertension and growth retardation in the fetus.

Commentary

Snoring and sleep apnea are associated with hypertension in the nonpregnant population. Snoring has been reported to be more common in pregnancy (1). This may be secondary to weight gain, nasal congestion and pharyngeal edema. This is the first study to study the relationship between hypertensive diseases of pregnancy and snoring. It also is the first to find an association between snoring and adverse fetal outcome. Hypertension was increased in snorers, and there was a trend towards preeclampsia.

Limitations of this study include its cross-sectional design, which precludes any conclusions regarding cause and effect. Another problem with the study design is that maternal weight rather than body mass index was controlled for. However, these intriguing results add to our knowledge about the risk factors for hypertension during pregnancy. Further studies using polysomnography would help clarify the association between snoring, sleep apnea and pregnancy outcomes. There has also been an interesting report of a reduction in nocturnal hypertension in preeclamptic patients with nasal CPAP (2). Additional investigation is needed to see if adverse outcomes from preeclampsia can be reduced with this strategy.

References

1. Loube DI, Poceta JS, Morales MC, Peacock MD, Mitler MM. Self-reported snoring in pregnancy. Association with fetal outcome. *Chest*. 1996 Apr;109(4):885-9.

2. Edwards N, Blyton DM, Kirjavainen T, Kesby GJ, Sullivan CE. Nasal continuous positive airway pressure reduces sleep-induced blood pressure increments in preeclampsia. *Am J Respir Crit Care Med.* 2000 Jul;162(1):252-7.