



SLEEP DISORDERS ASSOCIATED WITH PREGNANCY – A LITERATURE REVIEW

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ABSTRACT

Pregnancy is a condition during which both physiological and pathological changes can disrupt sleep, cause development of maternal sleep disorders or exacerbate pre-existing conditions. Pregnancy-related sleep disorders are common and are associated with significant potential risk to the mother and the foetus. Based on many recent articles we have described most common and important conditions which may disrupt sleep during pregnancy, like sleep-disordered breathing, insomnia, restless leg syndrome, sleep-related leg cramps and gastroesophageal reflux disease. Pregnancy complicated with sleep disturbances is related to higher risk of gestational and obstetric complications including gestational diabetes, gestational hypertension, preeclampsia, longer labour duration, higher risk of caesarean delivery, irregular foetal development and preterm birth or even stillbirth. Obstetricians and physicians should consider and manage early recognized pathologic sleep disturbances in pregnancy in order to minimize or prevent adverse outcomes.

BACKGROUND

Pregnancy is in an exceptional condition associated with physiologic, hormonal and anatomical changes. Some of these gestational changes can disrupt sleep, cause development of maternal sleep disorders or exacerbate pre-existing conditions [1, 2]. Pregnancy-related sleep disturbances are common and have an impact on the health of the mother and her unborn child. Clinicians should early recognize pathologic sleep disturbances in pregnancy in order to minimize or prevent adverse outcomes [1, 3].

PHYSIOLOGICAL CHANGES

There is a variety of adaptations associated with pregnant woman's body essential for regular development of the foetus, which may disrupt sleep. Altered levels of circulating hormones including melatonin, cortisol, progesterone, oestrogen and pituitary hormones can directly and indirectly influence sleep quality. What is more, gravid uterus makes it difficult to find comfortable sleep position, impedes breathing by elevating of the diaphragm and presses bladder causing awakenings due to need of urination. More frequent urination is also caused by increased glomerular filtration rate and relaxation of smooth muscles of the renal pelvis. The weight of the foetus, the enlarged uterus and the fluid retention with the exaggerated curvature of lower spine, put a large strain on the woman's bones and muscles. As a result, many pregnant women get back pain leading to insomnia. Vasodilation and increased intravascular volume during pregnancy typically leads to mucosal oedema in nose, oropharynx, larynx and trachea making it harder to breathe. Moreover, weight gain with fat deposition around the neck and pharyngeal oedema could cause sleep-disordered breathing (SDB). Also, relaxation of smooth muscles of lower oesophageal sphincter and upward displacement of the stomach by the enlarged uterus contribute to increased incidence of gastroesophageal reflux, which exacerbates during horizontal position [1, 4, 5].

CONDITIONS ASSOCIATED WITH SLEEP DISRUPTION IN PREGNANCY

Sleep-disordered breathing

Sleep-disordered breathing (SDB) occurs in 10-32% of all pregnancies, mostly as obstructive sleep apnoea (OSA) [6]. It is a known risk factor for gestational diabetes mellitus, gestational hypertension, preeclampsia and caesarean deliveries as well as neonatal adverse outcomes, such as growth restriction and preterm delivery [6, 7]. Diagnosis of OSA in pregnant women is difficult due to unspecified symptoms [6]. Polysomnography is a gold standard in diagnosis of sleep-disordered breathing, although is rarely performed in diagnosing pregnant women due to the cost and inconvenient use [6]. Sleep disordered breathing occurs more often in pregnant women compared with non-pregnant population [2]. Management depends on severity of SDB symptoms. Treatment of pregnant women with severe OSA symptoms or snoring consists

of using continuous positive airway pressure (CPAP). It is proven that CPAP improves sleep quality and decreases OSA symptoms whereas the impact on prevention of gestational and neonatal adverse outcomes remains unclear [2].

Insomnia

Insomnia is common in pregnancy as well as in general population [7]. It may occur both as a symptom and as a disorder [2, 7]. Primary insomnia consists of impaired daytime functioning with sufficient opportunity to sleep in addition to sleep disruption [7]. Secondary insomnia, in other words insomnia treated as a symptom, means one or more of the following sleep difficulties: difficulty in falling asleep or maintaining sleep, waking up too early or nonrestorative sleep [7]. Insufficient sleep duration is defined as shorter than 6 hours while it is recommended for all adults to maintain a sleep duration ranging between 7 to 9 hours [8]. The third trimester is found to be the most sleep-disrupting [8]. Risk factors for developing insomnia during pregnancy include: age over 30 years, nulliparity, smoking, prepregnancy and perinatal mood disorders, preeclampsia and pregnancy-induced hypertension, exposure to noise (other children, bed partner, etc.) [1]. Some studies suggest an association between insufficient sleep duration, lower birth weight and preterm birth [8]. Sleep disruption is also a risk factor for mood disorders as well as it may be a symptom of depression episode [9]. It is also an additional risk factor for developing postpartum depression [10]. Treatment of insomnia in pregnant women should be initiated with non-pharmacological methods such as relaxation exercises or gymnastics, stimulus control techniques, evening fluid intake restriction and caring for sleep hygiene practices [9, 11, 12]. Other efficient non-pharmacological treatment is psychotherapy [9]. Pharmacological treatment might be necessary, especially in secondary insomnia [13]. Benzodiazepines, sedative hypnotics and antihistamines are considered as the safest medications in pregnancy, however there are some case studies suggesting foetal and obstetric adverse outcomes [9]. Melatonin supplementation is not recommended in pregnancy as it may cause lower birth weight and prolonged gestation in animals [9].

Restless legs syndrome

Restless legs syndrome (RLS) is a common neuromotor disorder characterized by an irresistible urge to move the legs to stop the unpleasant feelings described as aching or tingling. Symptoms occur or worsen at night while at rest and are relieved by movement, which leads to sleep disruption [1, 14, 15, 16].

Pregnant women are more likely to develop RLS. The prevalence of RLS during pregnancy is 2 to 3 times more frequent than in the general population, affecting about 15-30% of pregnant women, mainly during the third trimester and generally resolve few days before delivery [1, 15].

There is no specific test for RLS, thus the condition is diagnosed on the basis of clinical evaluation of the patient using diagnostic criteria of the International Restless Legs Syndrome Study Group (IRLSSG) [15].

As an initial management nonpharmacological treatment should be considered in order to minimize the risk of foetal harm. Guidelines suggest to maintain good sleep hygiene, introduce relaxation techniques, stretching, massage and heat application [1]. Pharmacological treatment include iron supplementation. In severe RLS in the last trimester, low-dose clonazepam, gabapentin, carbidopa, and levodopa may be considered [1,16].

Sleep-related leg cramps (SRLCs)

Leg cramps are painful, involuntary muscle contractions affecting lower extremities [17]. This condition occurring during the night can cause sudden awakening and difficulty in returning to sleep. SRLCs is a common problem affecting from 10% non-pregnant women up to 75% women in the last trimester of pregnancy [1]. Pregnant women are more likely to have SRLCs, which generally resolve short after labour.

To better diagnose SRLCs, the International Classification of Sleep Disorders describes 3 diagnostic criteria for this disorder including pain localization, characteristic and circumstances [18].

There is no strong evidence for any medications and nonpharmacological treatments for sleep-related leg cramps during pregnancy, however studies suggest that magnesium supplementation may have positive effect on leg cramps in pregnant women [1,18].

Gastroesophageal reflux disease (GERD, heartburn)

Gastroesophageal reflux disease is a disorder in which gastric acid enters the oesophagus due to lower oesophageal sphincter tone. It is a frequent disorder as affects from 40 to 85% of women during pregnancy and normally resolves after delivery [9]. Pregnant women are more likely to develop heartburn because of accumulated/additional effect of changes during pregnancy. Reflux can cause sleep disruption due to exacerbated symptoms in horizontal position at night [1].

First line therapy option of gastroesophageal reflux disease in pregnancy requires modifications of lifestyle as elevation of the head end of the bed and elimination of dietary triggers. In patients with persistent symptoms pharmacological treatment should be considered and sucralfate and alginate acid are preferable [19, 20].

MATERNAL AND FETAL OUTCOMES ASSOCIATED WITH SLEEP DISORDERS

Long-term sleep disturbances during pregnancy can be a threat to the health and life of the mother and the child. There are studies suggesting that sleep disturbances may be associated with complications of pregnancy like gestational diabetes, gestational hypertension, preeclampsia, longer labour duration and higher risk of caesarean delivery [13]. Also, mood disturbances and the recurrence of depressive symptoms are common [1, 2, 13]. Referring to the foetus, persistent poor sleep may lower the uterine blood flow and cause irregular foetal development [1]. Studies show relationship between duration of sleep and higher risk of lower birth weight and stillbirth, but little research has investigated the impact of poor sleep quality on foetal health and preterm birth [8]. Maternal supine position in late pregnancy is associated with compression of the inferior vena cava and may lead

to regular and repetitive exposure to reduced delivery of oxygen and nutrients from placenta to the foetus, which cause higher risk of stillbirth [8, 13].

CONCLUSIONS

Sleep disturbances are common complaints in pregnancy and may occur in women who had never not report sleep difficulties before gestation [21]. Pregnancy complicated with sleep disturbances is related to higher risk of gestational and obstetric complications. Obstetricians and physicians should consider and manage sleep disorders during pregnancy.

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ABBREVIATIONS

GERD – gastroesophageal reflux disease

IRLSSG – International Restless Legs Syndrome Study Group

OSA – obstructive sleep apnoea

RLS – restless leg syndrome

SDB – sleep-disordered breathing

SRLCs – sleep-related leg cramps

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