

Sleep disturbances in pregnancy: Why and how should we manage them?

Maternal sleep quality worsens during pregnancy, already from the first trimester on and especially in the third trimester.^{1,2} Nevertheless, the sleep quality is often ignored by both physicians as well as by women themselves as sleep quality is generally assumed to improve after delivery. However, sleep disturbances may continue during postpartum period or even become chronic. The most important sleep disturbances during pregnancy are primary insomnia, sleep disordered breathing (SDB) and restless legs syndrome (RLS).^{2,3} Sleep disturbances typically cause sleep fragmentation and deterioration of sleep architecture leading to sleep loss and daytime sleepiness, tiredness, fatigue, cognitive difficulties and increase risk for accidents.^{2,3} The algorithm of the diagnose and treatments of the most important sleep disturbances in pregnancy is illustrated in Figure 1.

Primary insomnia includes both initiation insomnia, which shows as difficulties to fall asleep, and maintenance insomnia, which includes nightly awakenings and too early morning awakenings (being unable to fall asleep again). The etiology of primary insomnia during pregnancy is multifactorial, and might be associated with physical (hyperemesis, nocturia, joint and back pain, heartburn, nasal congestion, thermoregulatory problems, contractions, fetal movements, uncomfortable or unusual sleeping positions, dreams and nightmares) and mental (especially depression and anxiety) causes. Poor sleep quality has shown to be associated with the increased risk of complications such as gestational diabetes, preterm delivery, prolonged labor and increased risk of cesarean section.^{2,3}

Constant snoring is a typical feature of SDB, which includes sleep apnea and partial upper airway obstruction. In pregnant women, SDB is often caused by partial upper airway obstruction rather than of episodes of frank obstructive apnea.² Gestational weight gain and estrogen-induced hyperemia, mucosal edema and mucus hypersecretion lead to the narrowing of upper airways exacerbating the risk for SDB. However, progesterone-induced stimulation of breathing, sleeping in lateral position, and decrease in the duration of rapid eye movement sleep (during which breathing is more unstable) may protect against SDB. Furthermore, micrognathia and loose throat and larynx are important risk factors for SDB. In addition to snoring, other typical symptoms are headache and

dry mouth in the morning and daytime sleepiness (most typically irresistible falling asleep when inactive). SDB has shown to be in association with increased risk for gestational diabetes, pregnancy-induced hypertension, preeclampsia, intrauterine growth retardation, preterm delivery, cesarean section and neonatal intensive care unit admissions.^{2,4}

RLS is a nocturnal neurosensory movement disorder, which is connected with dopaminergic dysfunction. Although the etiology is still unclear, RLS may be idiopathic, genetic, or linked to various disorders, especially iron deficiency. RLS is characterized by unpleasant sensations, most commonly in the legs. The sensations occur at rest and worsen towards the evening and night. Also smoking, use of caffeine, some medications or alcohol may initiate or exacerbate the symptoms. Transient RLS in previous pregnancies is associated with an elevated risk of new transient symptoms in future pregnancies, as well as with an increased risk for future development of chronic idiopathic RLS.^{2,5} An association between RLS and hypertensive pregnancy disorders has been shown.²

Sleep disturbances during pregnancy are known risk factors for anxiety/depression both during pregnancy and postpartum period.^{1,2,6} Sleep disturbances often herald mood disturbances, and pregnant and postpartum women with mood symptoms typically suffer from sleep disturbances, especially from primary insomnia which may increase recurrence of a preexisting mental illness.⁶

Detection of the origin of the symptoms is the crucial first step in the management of maternal sleep disturbances. For the diagnosis of primary insomnia, questionnaires are feasible and sufficiently adequate tools in clinical practice. Because of the mismatch between subjective symptoms and objectively measured sleep quality, polysomnography, which measures sleep stages, is rarely needed.² Of note is, that the patient may express having "worse sleep quality" or "insomnia symptoms", which may not stem from primary insomnia, but are secondary for instance for SDB (maintenance insomnia), RLS (initiation insomnia) or mental symptoms (initiation and maintenance insomnia). If SDB is suspected, ambulatory sleep polygraphy, which measures breathing and blood oxygen level is necessary.² In RLS, type and occurrence time of the symptoms and relief of the

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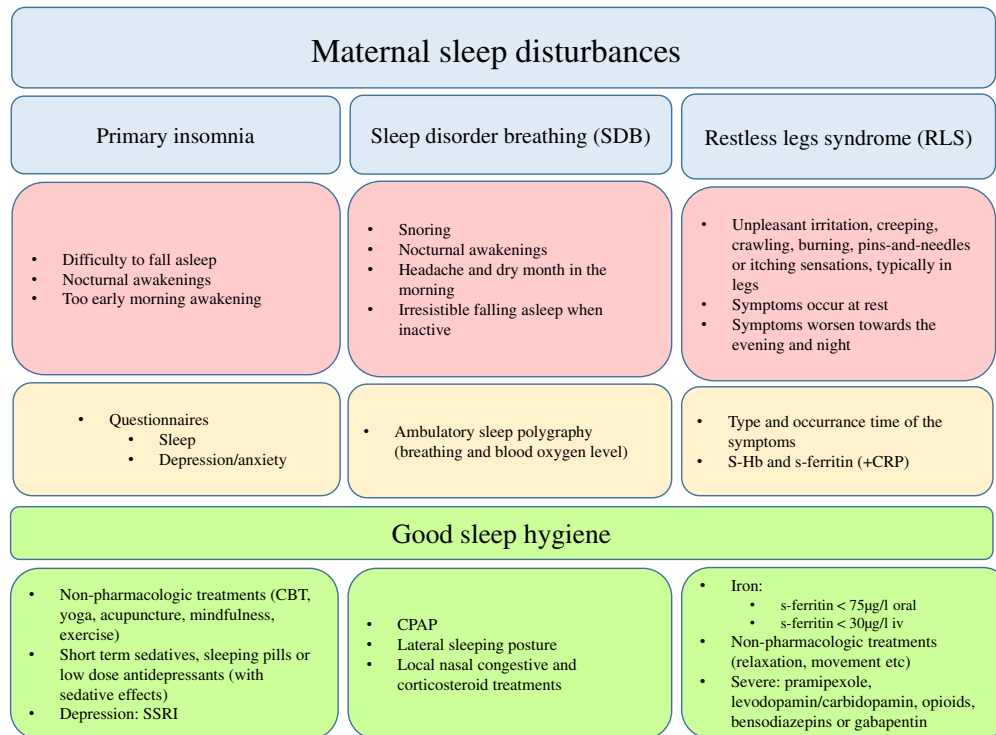


FIGURE 1 The algorithm of the diagnose and treatments of the most important sleep disturbances in pregnancy. CBT, cognitive behavioral therapy; CPAP, continuous positive airway pressure; CRP, C-reactive protein; SSRI, serotonin reuptake inhibitors

symptoms by movement, such as walking or stretching the limbs, are diagnostic. As iron deficiency may induce RLS, measurement of serum hemoglobin and ferritin (+C-reactive protein) is essential.⁵ To detect mental problems, especially depression and anxiety, structural questionnaires can be used.²

Good sleep hygiene is the basis of the treatment of all sleep disturbances. It includes convenient temperature in bedroom, reduced late fluid intake to prevent nocturia, suitable diet in case of gastro-esophageal reflux, massage in case of muscular pain and use of comfortable mattress and pillows. For primary insomnia non-pharmacologic treatments, especially cognitive behavioral therapy, is recommended and effective. It can be carried out as individual or group therapy. Additionally, yoga, acupuncture, mindfulness, and exercise are safe and effective. In case of severe or persistent insomnia, a short-term use of sedatives (including sedative antihistamines), sleeping pills (especially benzodiazepine-like drugs) or low dose antidepressants (with sedative properties) can be prescribed after risks and benefits consideration. However, all these drugs pass the placenta and although no teratogenic effects has been shown, they may be harmful for fetus and new-born. A long-term use of sedatives and sleeping pills should not be offered, since they often leads to noxious effects, like deterioration of sleep architecture and dependence on medication. Melatonin or herbal preparations, like valerian, are not recommended for treatment of insomnia during pregnancy or lactation because of the lack of safety and efficacy data. In cases of insomnia due to aggravating of mood symptoms, antidepressants, especially serotonin reuptake inhibitors, may be warranted.²

The gold standard treatment for SDB is nasal continuous positive airway pressure (CPAP) and it is shown to be safe and effective also during pregnancy. After the diagnosis of SDB, CPAP treatment should be initiated without a delay. Positional treatment, especially lateral sleep posture, is recommendable. In general rule, surgical procedures should not be performed during pregnancy for the treatment of SDB. Local nasal congestive and corticosteroid treatments reduce nasal mucosal edema and thus improve nasal ventilation. In addition, treating respiratory infections effectively and gastro-esophageal reflux with tilted position of the upper body while in bed or proton-pump inhibitors, such as omeprazole, are also important.²

For the treatment of RLS, per oral iron supplementation (accompanied with C-vitamin for better iron absorption; serum ferritin level <75 µg/L) is recommended. However, in severe RLS (and with serum ferritin level <30 µg/L), oral iron is often insufficient or has a too slow effect and thus intravenous iron, safe also during pregnancy, may be needed. In addition, folate supplementation is favorable for RLS and it is also advisable during the periconception and early pregnancy period for fetal development. In addition, the use of magnesium may be beneficial, although the efficacy data is insufficient. Furthermore, relaxation procedures, walking, stretching, massage, use of compression stockings while sleeping or a warm bath before going to bed may also relieve the symptoms. In severe cases, pramipexole, levodopamin/carbidopamin, opioids, bensodiazepins or gabapentin beyond the first trimester may be needed under a consultation of a neurologist, with the lowest efficient

dose, although all these medications may induce risks and side-effects for fetus and new-born.^{2,5}

Although sleep disturbances are frequent during pregnancy, the sleep quality is not systematically assessed during pregnancy follow-ups. Furthermore, the research evaluating the reasons and consequences of maternal sleep disturbances and the safety and efficacy of the treatments are scant. Good sleep quality is, nevertheless, essential for good quality of life and good health state and thus additional research in the field is indispensable.

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