

Sleep Loss Tied to Adverse Perinatal Outcomes

BY SUSAN LONDON

SEATTLE — Sleep disturbances during pregnancy increase the risk of adverse perinatal outcomes, such as gestational diabetes and cesarean delivery, according to an overview of research presented at the annual meeting of the Associated Professional Sleep Societies.

"Sleep disturbances are common during pregnancy," said Bilgay Izci Balsarak, Ph.D., of the University of Glasgow (Scotland) Sleep Centre. "The majority of pregnant women experience some level of sleep disturbance, especially in the third trimester of pregnancy."

A 2007 poll conducted by the National Sleep Foundation found that 84% of



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DR. BALSARAK

pregnant women reported experiencing sleep problems at least a few nights per week, she noted. This compared with 67% of all women surveyed.

Altered sleep during pregnancy stems from a variety of hormonal, physiologic, and psychological factors, according to Dr. Balsarak. These factors can affect sleep directly, as in the case of progesterone causing sedation, or indirectly, as in the case of heartburn or nocturia causing awakenings.

The sleep disturbances seen during pregnancy include both nocturnal perturbations (poor sleep quality, insomnia, and frequent awakenings) and daytime symptoms (fatigue and daytime sleepiness), she noted.

Pregnancy-related changes can trigger frank sleep disorders or exacerbate pre-existing ones, such as restless legs syndrome, sleep-disordered breathing, and parasomnias.

The acute sleep loss or fragmented sleep that results from sleep disturbances "can cause adverse perinatal outcomes," she said. Retrospective and prospective studies, for example, have shown that pregnant women with sleep-disordered breathing have a two- to fivefold increased risk of developing gestational diabetes after body mass index is taken into account (*Am. J. Respir. Crit. Care Med.* 2007;175:A996; *Sleep* 2009;32:A320-1).

Other research has linked sleep disturbances to birth outcomes. For instance, compared with women with a total sleep time of at least 7 hours in late pregnancy, women with a total sleep time of less than 6 hours or 6-6.9 hours have sharply elevated odds of cesarean delivery (odds ratios, 4.5 and 3.7, respectively) (*Am. J. Obstet. Gynecol.* 2004;191:2041-6). Women sleeping less than 6 hours also have longer labor, on average, than those sleeping at least 7 hours (29 vs. 18 hours).

Studies have found correlations between unfavorable sleep parameters in late pregnancy and elevated levels of depressive symptoms, both at that time and in the early postpartum period.

"Early recognition, management, and treatment of sleep disturbances are important to prevent adverse perinatal outcomes," Dr. Balsarak said. However, she added, there are currently no practice parameters when it comes to screening for

and managing sleep disturbances during pregnancy.

"Regarding management, nonpharmacologic interventions should be considered as the first choice, including lifestyle modifications and cognitive behavioral therapy strategies," she recommended.

Clinicians should encourage women to adopt healthy lifestyle behaviors, such as daily exercise, that may improve sleep, Dr. Balsarak said. And they should coun-

sel women about measures to address specific symptoms disrupting sleep, such as modifying eating habits to reduce heartburn.

"If pharmacological treatment is necessary, it should be used with caution due to potential side effects on the fetus," she concluded.

Dr. Balsarak reported that she had no conflicts of interest in association with her presentation. ■

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References: 1. Data on file. Novo Nordisk Inc, Princeton, NJ. 2. Meneghini LF, Rosenberg KH, Koenen C, Meriläinen MJ, Lüddeke H-J. Insulin detemir improves glycaemic control with less hypoglycaemia and no weight gain in patients with type 2 diabetes who were insulin naive or treated with NPH or insulin glargine: clinical practice experience from a German subgroup of the PREDICTIVE study. *Diabetes Obes Metab.* 2007;9(3):418-427. 3. Hermansen K, Davies M, Derezinski T, Ravn GM, Clauson P, Home P, for the Levemir Treat-to-Target Study Group. A 26-week, randomized, parallel, treat-to-target trial comparing insulin detemir with NPH insulin as add-on therapy to oral glucose-lowering drugs in insulin-naïve people with type 2 diabetes. *Diabetes Care.* 2006;29(6):1269-1274. 4. Klein O, Lyngø J, Endahl L, Damholt B, Nosek L, Heise T. Albumin-bound basal insulin analogues (insulin detemir and NN344): comparable time-action profiles but less variability than insulin glargine in type 2 diabetes. *Diabetes Obes Metab.* 2007;9(3):290-299. 5. Philis-Tsimikas A, Charpentier G, Clauson P, Ravn GM, Roberts VL, Thorsteinsson B. Comparison of once-daily insulin detemir with NPH insulin added to a regimen of oral antidiabetic drugs in poorly controlled type 2 diabetes. *Clin Ther.* 2006;28(10):1569-1581. 6. Danne T, Endahl L, Haahr H, et al. Lower within-subject variability in pharmacokinetic profiles of insulin detemir in comparison to insulin glargine in children and adolescents with type 1 diabetes. Presented at: 43rd Annual Meeting of the European Association for the Study of Diabetes; September 17-21, 2007; Amsterdam, Netherlands. Abstract 0189. 7. Heise T, Nosek L, Rønn BB, et al. Lower within-subject variability of insulin detemir in comparison to NPH insulin and insulin glargine in people with type 1 diabetes. *Diabetes.* 2004;53(6):1614-1620. 8. Data on file. NDA21-536. Novo Nordisk Inc, Princeton, NJ.



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