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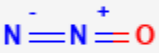
Nitrous Oxide

Revised: October 31, 2018.

CASRN: 10024-97-2



Drug Levels and Effects

Summary of Use during Lactation

Because the serum half-life of nitrous oxide in the mother is short and the drug is not expected to be absorbed by the infant, no waiting period or discarding of milk is required.[1][2] Some evidence indicates that primiparous mothers who use inhaled nitrous oxide during labor for analgesia have better breastfeeding success than mothers who do not. If used as part of general anesthesia, breastfeeding can be resumed as soon as the mother has recovered sufficiently from anesthesia to nurse. When a combination of anesthetic agents is used for a procedure, follow the recommendations for the most problematic medication used during the procedure.

Drug Levels

The serum half-life of nitrous oxide is less than 3 minutes, so extensive passage into milk is unlikely.[1]

Maternal Levels. Relevant published information was not found as of the revision date.

Infant Levels. Relevant published information was not found as of the revision date.

Effects in Breastfed Infants

Relevant published information was not found as of the revision date.

Effects on Lactation and Breastmilk

A randomized, but nonblinded, study in women undergoing cesarean section compared epidural anesthesia with bupivacaine to general anesthesia with intravenous thiopental 4 mg/kg and succinylcholine 1.5 mg/kg for induction followed by nitrous oxide and isoflurane. The time to the first breastfeed was significantly shorter (107 vs 228 minutes) with the epidural anesthesia than with general anesthesia. This difference was probably caused by the anesthesia's effects on the infant, because the Apgar and neurologic and adaptive scores were significantly lower in the general anesthesia group of infants. It is not known what part nitrous oxide played in this difference in outcome.[3]

A retrospective database study found that primiparous women who receive a nitrous oxide-oxygen mixture for pain during delivery in addition to routine analgesia were more likely to be breastfeeding their infants at 48 hours postpartum than women who did not receive nitrous oxide. This correlation was not found when all women were included in the analysis.[4]

In a nonrandomized, nonblinded retrospective study, 62 women who chose labor with gas analgesia with 50% nitrous oxide and oxygen were compared to a control group of 124 women who did not receive gas analgesia during labor. Most of the women in the study were primiparous. Use of other labor medications was not reported. Women who received nitrous oxide had higher rates of breastfeeding and exclusive breastfeeding than those who did not at 7 days after discharge, at 1 month postpartum, and at 3 months postpartum.[5]

References

1. Hale TW. Anesthetic medications in breastfeeding mothers. J Hum Lact. 1999;15:185-94. PubMed PMID: 10578796.
2. Rooks JP. Safety and risks of nitrous oxide labor analgesia: a review. J Midwifery Womens Health. 2011;56:557-65. PubMed PMID: 22060215.
3. Sener EB, Guldogus N, Karakaya D et al. Comparison of neonatal effects of epidural and general anesthesia for cesarean section. Gynecol Obstet Investig. 2003;55:41-55. PubMed PMID: 12624551.
4. Jordan S, Emery S, Watkins A et al. Associations of drugs routinely given in labour with breastfeeding at 48 hours: Analysis of the Cardiff births survey. BJOG. 2009;116:1622-32. PubMed PMID: 19735379.
5. Zanardo V, Volpe F, Parotto M et al. Nitrous oxide labor analgesia and pain relief memory in breastfeeding women. J Matern Fetal Neonatal Med. 2018;31:3253-8. PubMed PMID: 28814150.

Substance Identification

Substance Name

Nitrous Oxide

CAS Registry Number

10024-97-2

Drug Class

Breast Feeding

Lactation

Anesthetics, Inhalation