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LETTER

Population Pharmacokinetic of Epidural Sufentanil in Labouring Women: A Multicentric, Prospective, Observational Study [Letter]

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Dear editor

I recently read the article titled "Population Pharmacokinetic of Epidural Sufentanil in Labouring Women: A Multicentric, Prospective, Observational Study" published in Drug Design, Development and Therapy.[1] While the study provides valuable insights into the pharmacokinetics of epidural sufentanil, I have identified a critical error in the "Anesthesia Management" section.

Specifically, the sentence:

> After placing an indwelling epidural catheter as a routine procedure, the mother was given an epidural injection of 0.1% ropivacaine and 3μg/mL sufentanil mixture.

should be corrected to:

> After placing an indwelling epidural catheter as a routine procedure, the mother was given an epidural injection of 0.1% ropivacaine and 0.3μg/mL sufentanil mixture.

This correction aligns with the stated concentration in the "Purpose" and "Materials and Methods" sections.

It is also important to highlight that the reported sufentanil dosage of 3 μg/mL deviates significantly from the standards established in clinical guidelines. The typical concentration of sufentanil used in epidural labor analgesia is 0.4–0.6 μg/mL, as recommended by Shen and Yao in their Expert Consensus on Obstetric Analgesia (2016).[2] The guideline emphasize the use of low-concentration local anesthetics combined with lipophilic opioids like sufentanil to ensure both safety and efficacy.

Given the potency of sufentanil (approximately 5–10 times more potent than fentanyl), the reported concentration of 3 μg/mL could cause serious clinical problems. High doses of sufentanil are known to lead to severe respiratory depression, hypotension, and central nervous system depression.[3] In epidural anesthesia, concentrations exceeding 0.5 μg/mL increase the risk of severe adverse effects, including neonatal respiratory depression and lower Apgar scores, as demonstrated by previous studies.[4]

A concentration of 3 μg/mL represents a tenfold increase over the standard dose, posing significant risk to both mothers and neonates, potentially leading to fatal complications. Medication concentration errors are a recognized cause of serious medical errors and can result in patient harm or death, particularly in anesthesia due to the narrow therapeutic window of these drugs.

We respectfully suggest that the authors consider this correction and update the manuscript accordingly to ensure the accuracy and safety of clinical practice based on this important study.

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Disclosure

The authors report no conflicts of interest in this communication.

References

1. Nie Y, Sun X, Cao R, et al. Population Pharmacokinetic of Epidural Sufentanil in Labouring Women: a Multicentric, Prospective, Observational Study. *Drug Des Devel Ther*. 2025;19:971–980. doi:10.2147/DDDT.S500189
2. Shen X YExpert consensus on obstetric analgesia(2016 edition). *J Clin Anesthesiol*. 2016;32(08):816–818.
3. Mather LE. Clinical pharmacokinetics of fentanyl and its newer derivatives. *Clin Pharmacokinet*. 1983;8(5):422–446. doi:10.2165/00003088-198308050-00004
4. Zhang L, Xu C, Li Y. Impact of epidural labor analgesia using sufentanil combined with low-concentration ropivacaine on maternal and neonatal outcomes: a retrospective cohort study. *BMC Anesthesiol*. 2021;21(1):229. doi:10.1186/s12871-021-01450-2

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