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Int J Obstet Anesth. 2016 Dec;28:3-11. doi: 10.1016/j.ijoa.2016.08.003. Epub 2016 Aug 28.

# Dose-response of intrathecal morphine when administered with intravenous ketorolac for post-cesarean analgesia: a two-center, prospective, randomized blinded trial.

Berger JS<sup>1</sup>, Gonzalez A<sup>2</sup>, Hopkins A<sup>3</sup>, Alshaeri T<sup>4</sup>, Jeon D<sup>3</sup>, Wang S<sup>5</sup>, Amdur RL<sup>6</sup>, Smiley R<sup>7</sup>.

## Author information

### Abstract

**BACKGROUND:** The appropriate dose of intrathecal morphine for post-cesarean analgesia is unclear. With the inclusion of routine non-steroidal anti-inflammatory drugs, the required dose of morphine may be significantly less than the 200-300µg common a decade ago. We performed a two-center, prospective, randomized, blinded trial comparing three doses of intrathecal morphine, combined with routine intravenous ketorolac, in 144 healthy women undergoing elective cesarean delivery.

**METHODS:** Patients received an intrathecal injection of hyperbaric bupivacaine 12mg, fentanyl 15µg and a randomized dose of 50, 100, or 150µg morphine in a volume of 2.2mL. Patients received intravenous ketorolac 30mg before leaving the operating room and 15mg intravenously every 6h for the duration of the study (24h). All received postoperative patient-controlled intravenous morphine. The primary endpoint was total intravenous morphine administered postoperatively over 24h, analyzed using mixed model regression.

**RESULTS:** There were no differences between dose groups (or institutions) in intravenous morphine use over 24h. Visual analog scale scores for pain and nausea did not differ. Pruritus was greater in the 100 and 150µg groups than the 50µg group at 6h and 12h, but there was no difference between groups in nausea or pruritus treatments. Respiratory depression or significant sedation did not occur.

**CONCLUSION:** The dose-response relationship of intrathecal morphine for multimodal post-cesarean analgesia suggests that 50µg produces analgesia similar to that produced by either 100µg or 150µg.

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**KEYWORDS:** Analgesia; Cesarean delivery; Intrathecal; Ketorolac; Morphine

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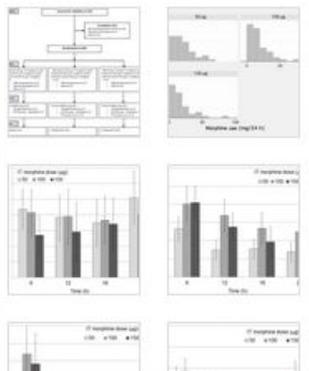
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- Highlights
- Abstract
- Keywords
- Introduction
- Methods
- Results
- Discussion
- Disclosure
- References

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Volume 28, December 2016, Pages 3-11

Original Article

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This work was presented in part at the 2014 Annual Meeting of the American Society of Anesthesiologists, New Orleans, LA, USA.

J.S. Berger<sup>a,†,✉</sup>, A. Gonzalez<sup>b,†</sup>, A. Hopkins<sup>a</sup>, T. Alshaeri<sup>c</sup>, D. Jeon<sup>a</sup>, S. Wang<sup>d</sup>, R.L. Amdur<sup>e</sup>, R. Smiley<sup>f</sup>

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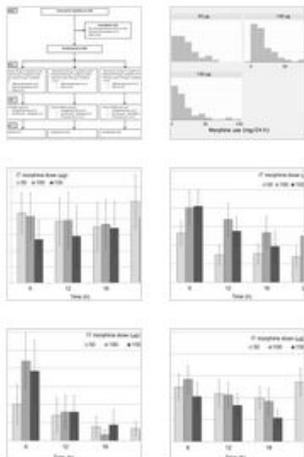
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## Highlights

- Intrathecal morphine in post-cesarean patients who received intravenous ketorolac was investigated.
- Intrathecal morphine 50 µg produced analgesia to 100 and 150 µg

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