



ACCIDENTAL INTRATHECAL MORPHINE OVERDOSE

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Drug errors are common in Anaesthetic practice. It may be due to syringe swap, ampoule swap, 'wrong drug' errors, and 'wrong dose errors'¹. We discuss a case of wrong dose of Morphine injected intrathecally, about possible complications and management.

Case report

A 29 year old, G2P2L1 parturient was posted for elective LSCS at 42wks of gestation with an indication of not willing for Vaginal Birth After Cesarean (VBAC). Preoperative examination was normal, except for the fact that she had experienced severe PDPH after her previous LSCS under spinal anaesthesia, for which she had to be hospitalized. No details of treatment were available.

Spinal anaesthesia was performed in right lateral position, a 25-gauge Whitacre spinal needle was inserted at L3-4 interspace. After clear CSF was identified, 2ml of 0.5% heavy bupivacaine (ANAWINTM, Neon, Mumbai, India), with 250µgms of preservative-free morphine(VERMORTM, Pharma chemico lab, Solon, India) was injected. Patient was immediately turned to supine position with a wedge under the right buttock. An intense sensory block to cold upto T4 was achieved. She was given O₂ through a face mask. The drop in blood pressure was corrected with a bolus of 5mg ephedrine and intravenous crystalloids. The surgery began and a healthy baby girl was delivered with APGAR scores of 9 and 10 at 1 and 5 minutes. There were no further haemodynamic changes. During closure, it came to our notice that the patient had accidentally received 2.25mgs of intrathecal morphine instead of 250µgs that was intended.



The surgeons were informed about the overdose and the patient was transferred to labour room for close observation and monitoring of haemodynamic variables, respiratory rate and oxygen saturation. Side effects of morphine like nausea, vomiting, pruritis, sedation were also looked for. Sedation scores and numerical pain scores were checked every hour, for the next 24hrs. She was given ondansetron 4mgs IV stat & q8h dose. She did not receive any other analgesics or sedatives for the next 48hrs. However, she was prescribed Ketorolac as rescue analgesic if required.

We decided to observe her closely and use naloxone infusion only if there were any signs or symptoms of narcotic overdose. She required no further analgesics for the next 48 hrs, she was comfortable, with no evidence of opioid overdose or toxicity. She did not have headache post operatively. She was discharged on the 4th day after an uneventful post operative course. Both mother and baby were fine.

Discussion

Neuraxial opioids provide superior analgesia compared to parenteral opioids during labor and post cesarean section. Single doses of intrathecal morphine at the time of cesarean delivery can provide excellent analgesia for prolonged duration. Morphine, in doses ranging from 0.075 mg to 0.5 mg intrathecally provides postoperative analgesia for up to 24 h after cesarean delivery². Site of action for spinal opiates includes presynaptic and postsynaptic μ receptors in the substantia gelatinosa of the dorsal horn of the spinal cord. Mechanism of action include suppressing excitatory neuropeptide release from C fibers³.

Pruritus, nausea, vomiting, delayed respiratory depression and urinary retention are side effects of intrathecal morphine². Respiratory depression is more common in the obese, elderly, patients with obstructive sleep apnoea, cardiopulmonary disease, preoperative opioid tolerance and those on magnesium⁴. ASA guidelines recommend respiratory monitoring after single-dose neuraxial morphine at least every hour for the first 12 h, then every 2 h for the next 12 h⁵.

Accidental overdosage of intrathecal morphine upto 510 mgms has been documented in literature⁶. Excessive doses of opioids may result in a variety of adverse outcomes, including hypothermia, myoclonic seizures which may not be antagonized by naloxone, pulmonary oedema, respiratory depression, coma and death⁵.



Treatment modalities in such situations include close monitoring, aspiration of CSF and replacement with equal volume of saline to decrease the neurotoxicity of morphine. Intravenous Naloxone at a loading dose of 100- 400 mcgs followed by an infusion (80 mcg/hr or based on the response) till the morphine effects have dissipated to prevent mechanical ventilation has been recommended. The other therapeutic option would be mechanical ventilation and supportive therapy⁷.

Despite the administration of this large dose of morphine, our patient did not manifest any adverse events or signs of overdose. This could possibly be due to the respiratory stimulant effect of progesterone in the obstetric setting⁴, reduced rostral spread of opiates when given in combination with hyperbaric local anaesthetics⁸ or genetic variability in the μ opioid receptor particularly polymorphism of OPRM1 at A118G⁹.

Patient had given a definite history of PDPH which required hospitalization during the previous spinal anaesthesia for LSCS. We have no idea what gauge spinal needle was used the previous time or what drugs were administered spinally. During this anaesthetic, she gave no indication of PDPH. This could probably be due to the intense analgesia obtained with the high dose intrathecal morphine and the small gauge pencil-point spinal needle that was used this time. Again we cannot be sure whether this was related in any way to the genetic variability or opioid receptor polymorphism mentioned above.

We were fortunate our patient was discharged without any untoward sequelae and prolongation in hospital stay. Most anaesthetists experience at least one drug error in their career¹⁰. 'Vigilance' should be the "watch word" of every anesthesiologist. Awareness, eternal vigilance, early recognition, meticulous attention to detail, close monitoring and readiness to intervene and institute invasive methods of monitoring and treatment if required can prevent fatal catastrophic outcomes in most cases.

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