

The Evaluation of Intrathecal Morphine for Post Operative Analgesia in Vaginal Hysterectomy

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Abstract: Background: A prospective randomized study was undertaken to evaluate the efficacy of intrathecal morphine along with bupivacaine for post-operative analgesia in patients undergoing vaginal hysterectomy.

Materials and methods: The study was conducted on 80 female patients in the age group of 18 to 60 years, belonging to ASA grade I to III scheduled for vaginal hysterectomy. Patients were randomly divided in to two equal groups, one receiving morphine (group M) and other normal saline (group B). Baseline pulse rate, blood pressure, respiratory rate, Visual analogue scale and sedation score were recorded & monitored at regular intervals.

Result: Respiratory rate & Oxygen saturation remained normal in both groups. Fall in pulse rate was more in group M Blood pressure was lower in group M as compared to group B. Higher sedation score in group M, sensory and motor blockade achieved was faster in group M with improved VAS score and less serious side effects.

Conclusion: We thus conclude that intrathecal administration of 0.1mg preservative free morphine along with 0.5% bupivacaine (17.5mg) significantly prolongs the duration of post-operative analgesia up to 14 hours. It also reduces post-operative analgesic requirement in first 24 hours.

Keywords: Intrathecal morphine, spinal anesthesia, vaginal hysterectomy.

THESIS SUMMARY

Introduction:

Intrathecal morphine has been one method of providing postoperative pain relief for more than two decades. Morphine, which is more hydrophilic than other opioids, has a longer residence time in the CSF and therefore may reach rostral sites over a longer period than other opioids. The basis of this is related to the location of opioids receptors in the substantia gelatinosa of the spinal cord. Opioid receptor activation inhibits the presynaptic release and postsynaptic response to excitatory neurotransmitters from nociceptive neurons. Transmission of pain impulses are interrupted

at the spinal cord level. Consequently, there is a potential of achieving adequate and long-lasting analgesia with an intrathecal injection of morphine. However, the downside of this hydrophilic character is an increased risk of adverse effects, especially delayed respiratory depression. By providing good analgesia for an extended period, intrathecal morphine considerably reduces the systemic opioids requirement. The side effects associated with intrathecal morphine are pruritus, sedation, nausea, vomiting and delayed respiratory depression which warrants close monitoring of the patients for the first 24 hours. Some of the side effects can be reversed with

naloxone. This study was undertaken to evaluate the efficacy of intrathecal morphine added to bupivacaine spinal anaesthesia in patients undergoing vaginal hysterectomy with regard to onset and duration of anaesthesia, haemodynamic effects, postoperative analgesia, sedation, and

Group M	Inj. Hyperbaric Bupivacaine (0.5%) 17.5mg (3.5ml) + Preservative free Inj. Morphine Sulphate 100µg (0.1ml) intrathecally to a total volume of 3.6ml
Group B	Inj. Hyperbaric Bupivacaine (0.5%) 17.5mg (3.5ml) + Inj. Normal saline (0.9%) 0.1ml intrathecally to a total volume of 3.6ml

occurrence of any side effects.

Materials and methods:

A prospective randomized study The study was conducted on 80 female patients in the age group of 18 to 60 years, belonging to ASA grade I to III scheduled for vaginal hysterectomy Patients were randomly divided in to two equal groups.

They received intrathecal drugs as follows.

In pre anaesthesia room, pulse rate, blood pressure and respiratory rate were noted & patients were preloaded with 1litre of crystalloids and premedicated with inj glycopyrrolate 0.004 mg/kg and inj odansatron 4 mg intravenously.

In operation theatre, lumbar puncture was performed under strict aseptic and antiseptic precaution in the lateral decubitus position at the level of L3-4 or L2-3 inter space using 23G or 25G number spinal needle. After ensuring free flow of CSF, study drug was injected. The time of intrathecal injection was noted and immediately after it patients were turned to supine. Baseline pulse rate, blood pressure, respiratory rate and sedation score(ramsay scale) were recorded & monitored every 5 minutes up to 30 minutes, at 45 minutes, 60 minute, 90 minute, 120 minute, 150 minute, 3h, 4h, 5h, 6h, 9h, 12h and at 24 hour. Visual analogue scale for pain was recorded at 1h, 2h, 3h, 4h, 5h, 6h, 9h, 12h and at 24hrs. Sensory blockade was assessed after injection of the drug to complete ablation of pinprick test. Motor blockade was assessed by bromage scale. Post-operatively rescue analgesia was supplemented with inj. diclofenac sodium 1.5 mg/kg intramuscularly when VAS score > 3. Patients were observed for side effects like hypotension, bradycardia, respiratory depression, nausea, vomiting, urinary retention and itching.

Results:

The age and weight of the patients and duration of surgery were comparable in both the groups ($p > 0.05$). A fall in pulse rate was more in group M as compared to group B but it was statistically significant ($p < 0.05$) only during 120 minutes to 5 hours after intrathecal injection of the drug. The lowest values of pulse were seen between 90-120 minutes in group M and B. Blood pressure was lower in group M as compared to group B during whole study period but did not reach statistical significance ($p > 0.05$). The lowest values of blood pressure were seen between 90-120 minutes in group M and B. Respiratory rate & Oxygen saturation remained normal in both groups at all time intervals during surgery and for 24hrs postoperatively. ($p > 0.05$). Higher sedation score in group M as compared to group B from 25 minutes after intrathecal injection of the drug up to 6 hours ($p < 0.001$). During this period, the patients were easily aroused but asleep when not disturbed. In the rest of period, the sedation score was comparable with group B ($p > 0.05$). The mean time of sensory blockade from intrathecal injection to onset of sensory analgesia at L1 level was 1.169 ± 0.731 minutes in group M and 1.806 ± 0.952 minutes in group B ($p < 0.05$). In both groups highest sensory level achieved was T4 – T8. The mean time to achieve highest sensory level was 5.950 ± 2.490 minutes in group M and 6.400 ± 3.078 minutes in group B ($p > 0.05$). The mean time of motor blockage from intrathecal injection to onset of grade 3 motor block was 5.0 ± 1.536 minutes in group M and 5.400 ± 1.905 minutes in group B ($p > 0.05$). The mean duration of motor block was 207.750 ± 23.176 minutes in group M and 214 ± 25.201 minutes in Group B

($p > 0.05$). VAS score was higher in group B as compared to group M at all time intervals except at 12th hours ($p < 0.001$), as by that time all patients in group B had already received rescue analgesia. In group M, 8 patients (20%) did not require analgesic on the day of surgery. The average duration of analgesia was 13.825 ± 4.206 hours in group M and 4.762 ± 0.679 hours in group B ($p < 0.001$). Total number of rescue analgesic doses required were significantly less in group M (1.225 ± 0.480 injections) as compared to group B (2.65 ± 0.580 injections) ($p < 0.001$). Intra-operatively, bradycardia occurred in 17.5% of patients in group M and 2.5% of patients in Group B, it was treated with inj atropine sulphate 0.6 mg intravenously. No patient developed hypotension which required treatment. 37.5% patients in group M and 15% patients in group B developed nausea and vomiting ($p < 0.05$). 37.5% patients in group M developed pruritus while no patients in group B developed pruritus ($p < 0.001$). No patients in any group developed respiratory depression.

Conclusion:

We thus conclude that intrathecal administration of 0.1mg preservative free morphine along with 0.5% bupivacaine (17.5mg) significantly prolongs the duration of post-operative analgesia up to 14 hours. It also reduces post-operative analgesic requirement in first 24 hours. It leaves the patient calm, comfortable, minimally sedated though easily arousable during intraoperative and immediate post operative period without any serious adverse effects except vomiting and pruritus which is easily treatable.

Key Words:

Intrathecal morphine, spinal anesthesia, vaginal hysterectomy.

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