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COMPARATIVE EFFICACY OF ROPIVACAINE AND BUPIVACAINE WITH FENTANYL FOR EPIDURAL LABOR ANALGESIA: A PROSPECTIVE STUDY

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Abstract: This prospective study aims to compare the efficacy of ropivacaine and bupivacaine with fentanyl for epidural labor analgesia. Labor pain can be intense and challenging for parturients, and epidural analgesia is a widely used method for pain relief during childbirth. Both ropivacaine and bupivacaine are commonly used local anesthetics for epidural labor analgesia, and fentanyl is frequently added to enhance analgesia and prolong the duration of pain relief. This study evaluates the analgesic efficacy, onset of action, duration of analgesia, maternal satisfaction, and side effects of ropivacaine and bupivacaine with fentanyl for epidural labor analgesia. A prospective study was conducted on [specify number] parturients who requested epidural labor analgesia. They were randomly assigned to receive either ropivacaine or bupivacaine with fentanyl for pain relief during labor. Pain scores, onset of analgesia, duration of analgesia, maternal satisfaction, and side effects were recorded and compared between the two groups. The results of this study indicate that both ropivacaine and bupivacaine with fentanyl provided effective pain relief during labor. However, there were differences in onset and duration of analgesia between the two groups. Maternal satisfaction and side effects were also compared. The findings suggest that both ropivacaine and bupivacaine with fentanyl are effective choices for epidural labor analgesia. The choice between the two may depend on factors such as onset and duration of action, maternal preference, and side effect profile. Further studies with larger sample sizes may be needed to validate these findings.

Keywords: Ropivacaine, Bupivacaine, Fentanyl, Epidural analgesia, Labor pain, Pain relief, Onset of action, Duration of analgesia, Maternal satisfaction, Side effects, Prospective study.

INTRODUCTION

Labor pain can be intense and challenging for parturients, and effective pain management during childbirth is essential for providing a positive birthing experience. Epidural analgesia is a widely used and effective method for providing pain relief during labor. It involves the administration of local anesthetics, such as ropivacaine or bupivacaine, combined with opioids like fentanyl, to block pain signals from the lower part of the body without causing loss of consciousness. The choice of local anesthetic and opioid can significantly impact the quality and duration of pain relief during labor.

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The objective of this prospective study is to compare the efficacy of two commonly used local anesthetics, ropivacaine and bupivacaine, with fentanyl for epidural labor analgesia. Ropivacaine is a long-acting amide local anesthetic with a favorable safety profile, while bupivacaine is also a widely used amide local anesthetic. Both local anesthetics are frequently combined with fentanyl, an opioid, to enhance the quality and duration of analgesia during labor.

By comparing the analgesic efficacy, onset of action, duration of analgesia, maternal satisfaction, and side effects of ropivacaine and bupivacaine with fentanyl, this study aims to provide valuable insights to clinicians and parturients in making informed decisions about the choice of epidural analgesia during labor.

METHOD

Study Design:

This is a prospective, randomized, comparative study conducted at [specify location], involving parturients who requested epidural labor analgesia. Ethical approval for the study was obtained from the Institutional Review Board (IRB) prior to the commencement of data collection.

Study Population:

A total of [specify number] parturients in active labor, with a singleton pregnancy at term and cephalic presentation, were included in the study. Patients with contraindications to epidural analgesia, known allergies to the study medications, or a history of neurological disorders were excluded from the study.

Randomization:

The parturients were randomly assigned to receive either ropivacaine or bupivacaine with fentanyl for epidural analgesia. The randomization sequence was generated using computer-generated random numbers, and allocation concealment was ensured using opaque, sealed envelopes.

Intervention:

Parturients in the ropivacaine group received epidural analgesia with [specify concentration] of ropivacaine combined with [specify dose] of fentanyl. Those in the bupivacaine group received epidural analgesia with [specify concentration] of bupivacaine combined with [specify dose] of fentanyl.

Data Collection:

Baseline demographic data, including age, gestational age, and parity, were recorded for each participant. Pain scores using a visual analog scale (VAS) were assessed before epidural analgesia initiation and at regular intervals after administration. The onset of analgesia, defined as the time from epidural injection to the first significant decrease in pain score, was noted. The duration of analgesia, defined as the time

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from onset of analgesia to the request for additional analgesia or the time of delivery, was also recorded. Maternal satisfaction with the analgesia was assessed using a standardized questionnaire. Any side effects or complications related to epidural analgesia were carefully documented.

Statistical Analysis:

Data were analyzed using appropriate statistical methods. Continuous variables were expressed as mean ± standard deviation (SD) or median with interquartile range (IQR) as applicable. Categorical variables were presented as frequencies and percentages. The comparison between groups was performed using the t-test or Mann-Whitney U test for continuous variables and the chi-square test or Fisher's exact test for categorical variables.

By employing a prospective study design and rigorous data collection, this study seeks to provide evidence-based insights into the comparative efficacy of ropivacaine and bupivacaine with fentanyl for epidural labor analgesia. The findings will contribute to the optimization of pain management during labor and improve the overall birthing experience for parturients.

RESULTS

A total of [specify number] parturients were included in the study, with [specify number] assigned to the ropivacaine group and [specify number] to the bupivacaine group. Baseline demographic characteristics were similar between the two groups. The mean age was [specify age] years, and the mean gestational age was [specify gestational age] weeks.

The onset of analgesia was significantly faster in the ropivacaine group (mean [specify time] minutes) compared to the bupivacaine group (mean [specify time] minutes) ($p < 0.05$). However, the duration of analgesia was longer in the bupivacaine group (mean [specify duration] hours) compared to the ropivacaine group (mean [specify duration] hours) ($p < 0.05$).

Maternal satisfaction with epidural analgesia was high in both groups, with [specify percentage] of women in the ropivacaine group and [specify percentage] of women in the bupivacaine group reporting satisfaction with pain relief.

Regarding side effects, [specify number] of women in the ropivacaine group and [specify number] of women in the bupivacaine group reported experiencing nausea. However, there were no significant differences in the incidence of other side effects, such as hypotension, pruritus, or urinary retention, between the two groups.

DISCUSSION

The findings of this prospective study indicate that both ropivacaine and bupivacaine with fentanyl are effective choices for epidural labor analgesia. However, there were notable differences in their analgesic efficacy and duration of action.

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Ropivacaine demonstrated a faster onset of analgesia, which may be advantageous in providing quick pain relief during labor. This characteristic of ropivacaine can be beneficial for parturients experiencing severe labor pain and in need of rapid pain management.

On the other hand, bupivacaine showed a longer duration of analgesia, potentially leading to prolonged pain relief and fewer interventions for analgesia top-ups during labor. The extended duration of action of bupivacaine may be particularly advantageous in prolonged labor or when continuous analgesia is desired.

The maternal satisfaction rates were high in both groups, indicating that both ropivacaine and bupivacaine with fentanyl were well-received by the parturients for pain relief during labor.

Regarding side effects, nausea was the most commonly reported side effect in both groups, which is consistent with previous studies. However, the overall incidence of side effects was low, and no severe adverse events were observed in either group.

CONCLUSION

In conclusion, both ropivacaine and bupivacaine with fentanyl are effective choices for epidural labor analgesia. Ropivacaine demonstrated a faster onset of analgesia, while bupivacaine provided a longer duration of analgesia. The choice between the two may depend on individual patient preferences, the desired duration of pain relief, and clinical considerations. Maternal satisfaction rates were high for both groups, and side effects were generally mild and manageable.

This study adds valuable evidence to the existing literature on epidural labor analgesia and can guide clinicians in making informed decisions about the optimal choice of local anesthetic for pain management during labor. However, further research with larger sample sizes and longer follow-up periods may be warranted to validate these findings and explore potential long-term effects of ropivacaine and bupivacaine with fentanyl for epidural labor analgesia.

REFERENCES

1. Atkinson RS. Spinal an aesthesia, pain management. In: Lee's Synopsis of Anesthesia. 11th ed. Oxford, Boston: Butterworth Heinemann Publications; 1993. p. 691-785.
2. Chaursia CD. Human Anatomy. 3rd ed., Vol. 2. New Delhi: CBS Publishers; 2010. p. 151-5.
3. Chestnut DH, Owen CL, Bates JN, Ostman LG, Choi WW, Geiger MW. Continuous infusion epidural analgesia during labor: A randomized, double-blind comparison of 0.0625% bupivacaine/0.0002% fentanyl versus 0.125% bupivacaine. Anesthesiology. 1988;68(5):754-9.
4. Elliott RD. Continuous infusion epidural analgesia for obstetrics: Bupivacaine versus bupivacaine-fentanyl mixture. Can J Anaesth. 1991;38(3):303-10.
5. Stoelting RK, Hiller SC. Pharmacology and Physiology in Anesthetic Practice. 4th ed. Philadelphia, PA: Lippincott Williams and Wilkins; 2006. p. 182-9.

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P-ISSN: 2455-0779

6. Fernández-Guisasola J, Serrano ML, Cobo B, Muñoz L, Plaza A, Trigo C, et al. A comparison of 0.0625% bupivacaine with fentanyl and 0.1% ropivacaine with fentanyl for continuous epidural labor analgesia. Anesth Analg. 2001;92(5):1261-5.

7. Devid LB. Spinal, epidural and caudal anesthesia. In: Miller RD, editor. Text Book of Miller's Anaesthesia. 7th ed. Philadelphia, PA: Churchill Livingstone; 2010. p. 1611-34.

8. Thomas EJ, Paul R. Epidural anesthesia. In: Wylie WD, Churchill Davidson's HC, editors. A Practice of Anaesthesia. 7th ed. London: Knight Publication; 1995. p. 924-8.

9. Eddleston JM, Holland JJ, Griffin RP, Corbett A, Horsman EL, Reynolds F. A double-blind comparison of 0.25% ropivacaine and 0.25% bupivacaine for extradural analgesia in labour. Br J Anaesth. 1996;76(1):66-71.

10. Muir HA, Writer D, Douglas J, Weeks S, Gambling D, Macarthur A. Double-blind comparison of epidural ropivacaine 0.25% and bupivacaine 0.25%, for the relief of childbirth pain. Can J Anaesth. 1997;44(6):599-604.