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Comparison of Postoperative Analgesic Effects of Epidural Ropivacaine with Butorphanol Versus Epidural Ropivacaine with Morphine in Patients Undergoing below Umblical Surgeries

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Abstract:-
Background: Comparison of the safety and efficacy of butorphanol(2mg) with 0.2% ropivacaine versus morphine (3mg) with 0.2%ropivacaine by epidural route for providing postoperative analgesia in patients undergoing below umbilical surgeries.

Methodology: The patients were allotted randomly into 2 groups. One group (Group RB) received 0.2% of Ropivacaine and 2mg of Butorphanol epidurally and another group (Group RM) received 0.2% Ropivacaineand 3mg of Morphine epidurally.

In the postoperative period, when the patients complained of pain, the intensity of pain was assessed using the VAS scale The pain intensity was assessed by VAS score at 0, 15, 30, 60 minutes, 2, 4, 6, 8, 10 and 12 hours after epidural injection, onset of analgesia, duration of analgesia, Systolic blood pressure, diastolic blood pressure, pulse rate, and respiratory rate were recorded at 0, 15, 30, 60 minutes, 2, 4, 6, 8,10 and 12 hours after epidural injection. SpO2 monitored continuously.

Results: The average onset time of analgesia of group RB was 12.34 ±1.18 minutes and the meantime of onset of analgesia in group RM was 15.56 ±1.14 minutes. The mean duration of analgesia was 251±42.68 minutes in group RB and the mean duration of analgesia was 355.4 ± 68.1 minutes in group RM.

Conclusion: Butorphanol (2mg) with 0.2% ropivacaine provided faster onset of analgesia and shorter duration of analgesia than with morphine(3mg) with 0.2% ropivacaine.

Keywords:- *Epidural, ropivacaine, butorphanol, morphine, post operative analgesia.*

I. INTRODUCTION

- The International Association for the Study of Pain(IASP) defines pain as an unwelcome emotional and sensitive experience associated with factual or implicit tissue damage or described in terms of similar damage.
- Uncontrolled pain in the postoperative period may produce a range of detrimental acute and chronic effects.
- Adequate pain control is essential and has been recognized as a prime concern for anaesthesiologists.
- Epidural analgesia using local anaesthetics alone or combined with opioids provides adequate pain relief in the postoperative period. Combination of opioids to local anaesthetic solutions placed in the epidural space results in improved analgesia.

The present study's primary goal is to assess and compare the safety and efficacy of epidurally administered butorphanol and morphine as adjuvants with bupivacaine for postoperative analgesia in below umbilical surgeries.

II. MATERIALS AND METHODS

The study was conducted in 100 patients of both male and female sex in the age group of 18-60 years meeting ASA class I and II criteria and are undergoing abdominal surgeries electively in Government General Hospital, Kurnool.

➢ *Inclusion criteria*
- Patients belonging to the age range of 18 to 60 years
- Both Sex
- Patients of ASA grade I and II
- Patients undergoing elective infraumbilical surgeries.

➢ *Exclusion criteria*
- Patient refusal
- Patients of ASA grade III, IV and V
- Infection at the site of injection
- Patients with coagulation abnormalities
- Patients with hypersensitivity to local anaesthetics

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The patients were randomly divided into two group as

GROUP RB: received 0.2% Ropivacaine plus Butorphanol (2mg),total volume 10ml.

GROUP RM (control group): received 0.2%Ropivacaine plus Morphine (3mg), total volume 10ml.

The patients were explained about the epidural method with the catheter in situ. They were also educated about the operation of direct visual analog scale(VAS) for assessment of the intensity of postoperative pain and were instructed to mark on the scale at the point which he she felt was representative of their position of discomfort.

- In the postoperative period, when the patients complained of pain, the intensity of pain was assessed using the VAS scale. When the VAS score was >5, the study drug was given through the epidural catheter.
- P-Value <0.001 was taken as statistically highly significant.

III. OBSERVATIONS AND RESULTS

A. Onset Of Analgesia:

The mean time of onset of analgesia in group RB was 12.34 ±1.18 minutes, and the meantime of onset of analgesia in group RM was 15.56 ±0.1.14 minutes. The onset of analgesia was faster in group RB compared to group RM, and it was statistically significant ($p<0.05$).

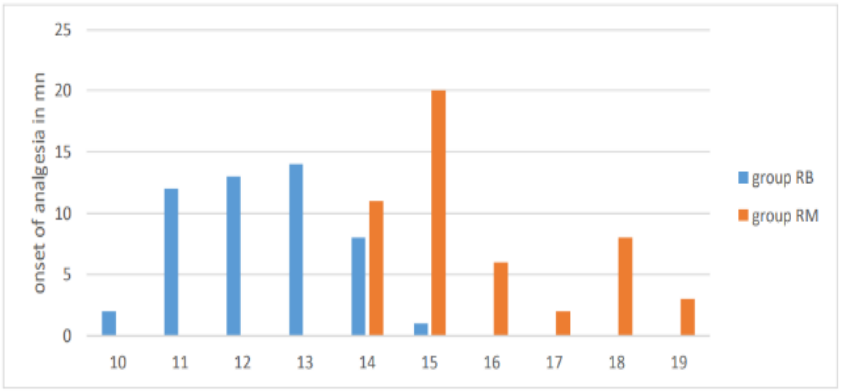

Fig. 1: ONSET OF ANALGESIA

B. Duration Of Analgesia:

The mean duration of analgesia was 251.6±42.68minutes in group RB, and the mean duration of analgesia was 355.4±68.1mintues in group RM. The duration of analgesia was longer in group RM compared to group RB, and it was statistically significant ($p<0.05$).

Mean duration of analgesia	group	Mean (Minutes)	SD	p-value <.0.01
	RB	251	42.68	
	RM	355.4	68.1	

Table 1: Duration Of Analgesia

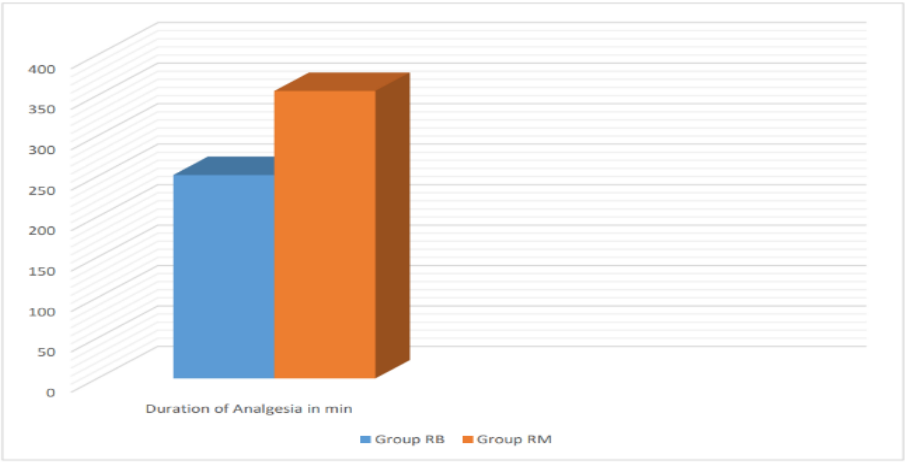

Fig. 2: DURATION OF ANALGESIA

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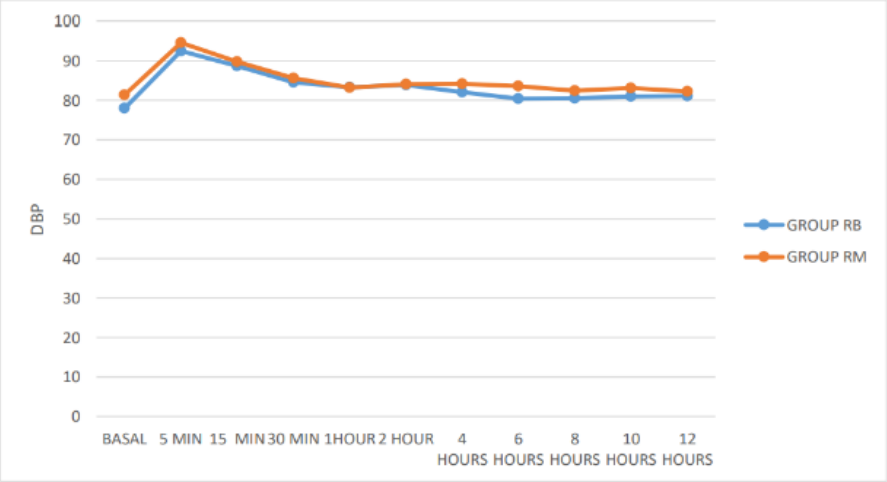

Fig. 3: DBP At Various Time Intervals:

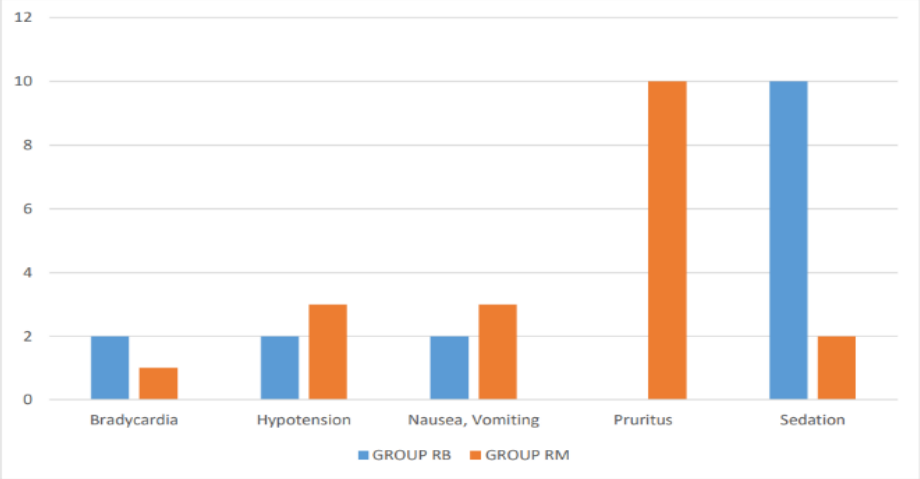

Fig. 4: Complications

C. Vas Score:

The mean VAS score forgroup RB and group RM is significant at 10 min,15 min and 4 hours with a p value<0.05.

D. Onset Of Analgesia:

In the present study, the mean time of onset of analgesia in the group RB was 12.34 ± 1,18 minutes, and in the group, RM was 15.56 ± 1.14 minutes. The difference in the mean time of onset of analgesia between the two groups was statistically significant, with group RB having the faster onset of analgesia than group RM (12.34 minutes vs. 15.56 minutes).

E. Duration Of Analgesia:

In the present study, the mean duration of analgesia in the group RB was 251.6 ± 42.68min, and in the group, BN, the mean duration of analgesia was 355.4 ± 68.1min. The difference in the mean duration of analgesia between the two groups was statistically significant (p<0.05), with group RM having a longer duration of analgesia than the group RB (355.4 ± 68.1min vs. 251.6 ± 42.68min).

IV. AIMS AND OBJECTIVES

A. Aims

Comparison of the safety and efficacy of butorphanol(2mg) with 0.2% ropivacaine vs. morphine(3mg) with 0.2% ropivacaine by epidural route for providing postoperative analgesia in patients undergoing below umbilical surgeries.

B. Objectives

- To compare the effectiveness of postoperative analgesia with epidural butorphanol with ropivacaine against morphine with ropivacaine.
- To compare associated hemodynamic changes.
- To compare side effects like hypotension, bradycardia, nausea, vomiting, pruritis, sedation, shivering, motor block and respiratory depression
- Group RB received Butorphanol(2mg) + 0.2% ropivacaine (total volume of 10 ml).
- Group RM received morphine (3mg) + 0.2% ropivacaine (total volume of 10 ml).

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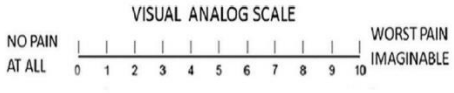
The following parameters were observed.

The pain intensity was assessed by VAS score at 0, 15, 30, 60 minutes, 2, 4, 6, 8,10 and 12 hours after epidural injection if patient complains of pain even after epidural injection intensity is assessed with VASscore and If it was >5, a non-opioid analgesic was given.



➢ *Onset of analgesia:*
The time interval from the administration of the study drug till the VAS score came down to <5.

➢ *Duration of analgesia:*
- The time interval between onset of analgesia, till patient complained of pain (VAS score >5) when rescue medication was given.

✓ Systolic blood pressure, diastolic blood pressure, pulse rate, and respiratory rate were recorded at 0, 15, 30, 60 minutes, 2, 4, 6, 8,10 and 12 hours after epidural injection. SpO2 monitored continuously.

✓ Side effects like pruritis, nausea, vomiting, hypotension, bradycardia, sedation, motor block, shivering, and respiratory depression was recorded in both groups.

➢ *Stastisticalanalysis :*
- In this study, 100 patients were made into 2 groups, each comprising of 50 patients.
- Continuous variables were represented as mean and standard deviation where data follows a normal distribution, otherwise as median with range.
- Categorical variables were represented as frequencies and percentages.
- The statistical significance of the difference in the outcome variables between the groups was assessed by the Chi-Square test, Fisher's exact test, and t-test.
- P-Value <0.05 was taken as significant statistically.

➢ *VAS Score:*
In group RB, the mean VAS scores at 0 min, 15 min, 30 min, 60 min, 2 hrs, and 4 hrs were 8.26±1.64, 6.6±1.22, 0.96±0.7, 0.58±0.67, 1.02±0.65, and 1.26±0.69. In group RM, the mean VAS scores at 0 min, 15 min, 30 min, 60 min, 2 hrs, and 4 hrs were 7.42±1.41, 6±1.41, 0.78±0.70, 0.36±0.52, 0.78±0.64, and 0.8±0.75. VAS scores for group RB and RM is significant at 15 mintues and 4 hours with p value <0.05.

Mean time of onset of analgesia	Group	Mean(min)	SD	p-value
	RB	12.34	1.18	
	RM	15.56	1.14	<0.01

Table 2: VAS SCORE

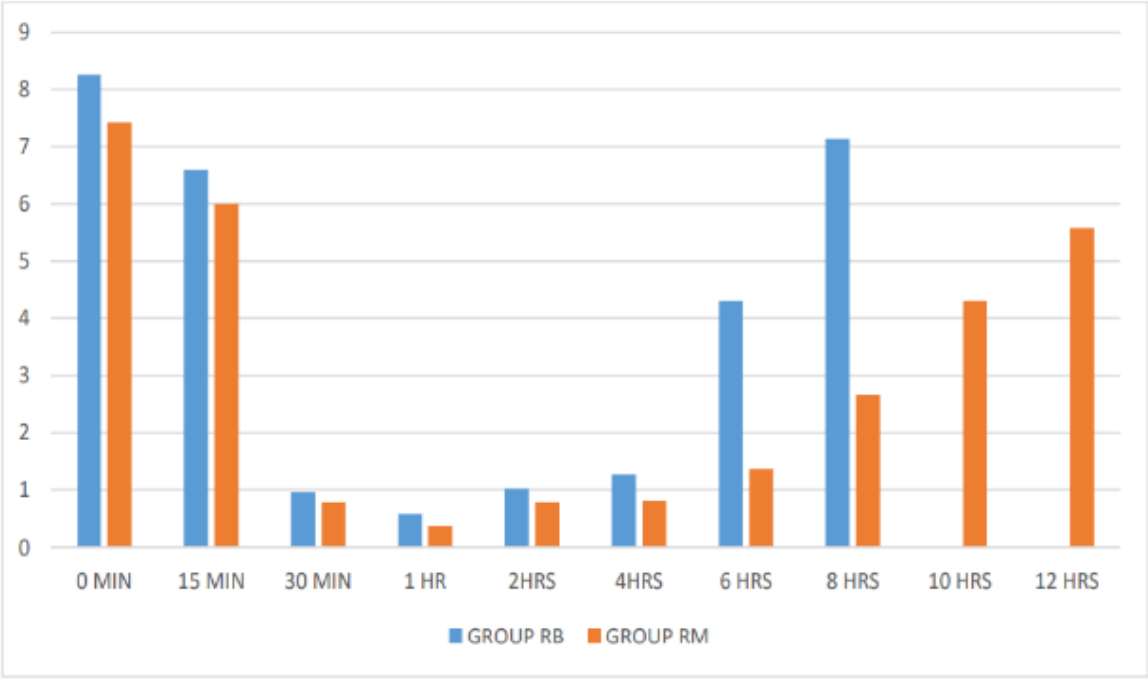


Fig. 5: VAS Score

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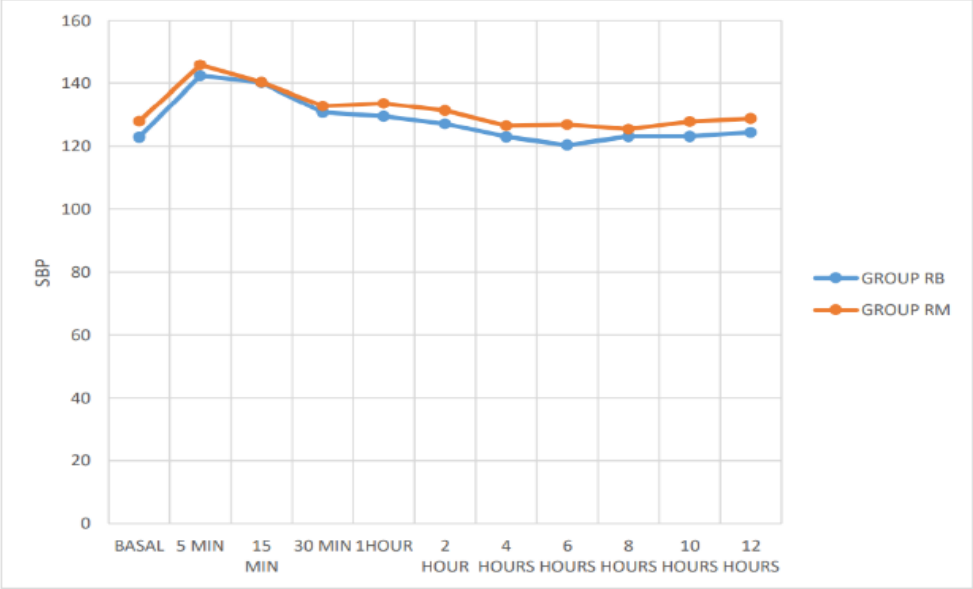

Fig. 6: SBP at Various Time Intervals:

V. CONCLUSION

From our study, we conclude thatButorphanol (0.04mg/kg) with 0.2% ropivacaine provided faster onset of analgesia than with morphine(0.06mg/kg) with 0.2% ropivacaine.

Morphine(0.06mg/kg) with 0.2% ropivacaine provided a longer duration of analgesia than with butorphanol(0.04mg/kg) with 0.2% ropivacaine.

From the present study, we concluded that butorphanol as additive to epidural ropivacaine provides a rapid, excellent analgesia with shorter duration when compared to epidural ropivacaine with morphine. nausea, vomiting, pruritus and hypotension are common with morphine as additive to epidural ropivacaine where as sedation was seen more commonly when butorphanol is used as additive.in view of safety profile,epidural ropivacaine in the treatment of postoperative pain for below umbilical surgeries .however, continuous monitoring is required.

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