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EFFICIENCY OF BUPIVACAINE AND LEVOBUPIVACAINE IN ORTHOPAEDIC AND GYNAECOLOGICAL SURGERIES USING SEQUENTIAL COMBINED SPINAL AND EPIDURAL ANAESTHESIA.

Dr. E. Hari Bhagavan — Associate Professor, Department of Anaesthesiology Alluri Sitarama Raju Academy of Medical Sciences Eluru-534004 West Godavari district, Andhra Pradesh, India

Dr. Naga Bhargavi* — Postgraduate, Associate Professor, Department of Psychiatry Government Doon Medical College Dehradun, Uttarakhand *Corresponding author

ABSTRACT

Background: In the present study,bupivacaine is most commonly used for spinal anesthesia.Levobupivacaine is levoenantiomer of bupivacaine and is less cardiotoxic compared to bupivacaine.

Objective: To evaluate the efficiency of sequential spinal and epidural anesthesia with bupivacaine and levobupivacaine in orthopaedic and gynaecological surgeries.

Methodology: 60 ASA grade 1 & 2 patients of both genders and of different age groups undergoing elective orthopaedic and gynaecological surgeries were included in the study.

They were divided into two groups

GroupA- 3ml of 0.5% Isobaric Bupivacaine-30 cases

Group B-3ml of 0.5 % Isobaric Levobupivacaine-30 cases

Results- The time of onset, time taken to reach highest sensory level are significantly prolonged with isobaric levobupivacaine compared to isobaric bupivacaine group.

Conclusion-It can be concluded by the present comparitive and statistically significant results that levobupivacaine is a safer alternative to bupivacaine which is commonly being used in neuraxial blockade.

KEYWORDS : Bupivacaine, Levobupivacaine, sequential combined spinal epidural anesthesia

Introduction:

Neuraxial anesthesia pertains to local anesthesics placed around the spinal cord, such as subarachnoid anesthesia and epidural anesthesia.Regional anesthesia offers safe, effective and economical benefits over general anesthesia.Combined Spinal and Epidural Anesthesia(CSE) offers advantages further more.

Aim & Objective:

Study is aimed at evaluating the relative efficacy of subarachnoid and epidural 0.5% Bupivacaine and 0.5% Levobupivacaine to relieve intraoperative and postopertaive pain in orthopaedic and gynaecological operations in age group of 20-50 years.

Methods:

60 adult ASA grade 1&2 point of both sexes and ages ranging from 20-50 years were included in the study who underwent orthopaedic and gynaecological surgeries.

They were divided into two groups:

Group A- 3ml(15mg) of 0.5% Isobaric Bupivacaine - 30 cases

Group B- 3ml (15mg) of 0.5% Isobaric Levobupivacaine - 30 cases.

Preoperative preparation consisted of overnight fasting, Injection Ranitidine 50mg, Injection Ondan 4mg. No sedative or analgesic medication was administered to any patients before surgery.Preoperative Blood Pressure, Pulse Rate and SpO2 were recorded.

Materials:

1. 23G Spinal needls (Quinckey)
2. 18 G Tuohy needle & 18 G EPIDURAL CATHETER
2. 2CC Disposable syringe
3. 0.5% Isobaric Bupivacaine ampoule
4. 0.5% Isobaric Levobupivacaine ampoule
5. Antiseptic Solutions & Spinal Towel

Procedure:

Before giving spinal anesthesia, thorough scrubbing of hands was performed and a sterile apron and gloves were worn. The patient was placed on the left lateral or sitting position and skin over the back was cleared with Betadine, spirit and draped with a sterile towel. In a sterile 2cc disposable syringe, 2ml of 0.2% Lignocaine was taken and a local infiltration was given at L2 - L3 intervertebral space and waited for one minute in order to prevent pain during needle insertion. A 18 G Tuohy needle was introduced in the same space by loss of resistance using air injection technique in sitting position and 18 G epidural catheter was threaded through this needle in the cephalad direction and properly fixed.A 23G spinal needle was introduced into L3-L4 intervertebral space in midline until it reaches the subarachnoid space [dripping of CSF observed]. Afer confirming its position in SAB space, the study drug or control drug was injected into SAB slowly with the bevel cephalad. The needle was withdrawn and patient was placed supine.Oxygen at the rate of 3-4 l/min was administered via face mark.

The level of sensory and motor blockade were monitored and recorded. Mean artrial pressure, heart rate, Pulse Rate and O2 Saturation and Respiratory rate were recorded every 5 minutes for the first 30 minutes and then every 15 minutes for 1 hour, later every 30 minutes throughout the surgety. monitored with pulse oximeter. when the MAP is decreased to <65 mmHg Inj. Ephedrine 5mg i.v and when heart rate decreased to < 50 bpm Inj.Atropine 0.3-0.6 mg i.v were given.

Post- Operative Observations- After surgery cardiovascular (Pulse Rate and Blood Pressure) and respiratory (Respiratory Rate and Oxygen Saturation) parameters were recoded and clinical evaluation of sensory and motor blockade were noted. During post operative period continuous monitoring of vital parameters at regular intervals was done until complete return of sensory and motor functions.

The patients were visited at regular intervals in order to arrest the post operative pain relief and complications.

In the post- operative period, follow up was carried on for the first 3 days to record the complications of spinal anesthesia.

The following parameters were recorded in both groups and the results were subjected to appropriate statistical analysis.

1. Time of onset of sensory blockade
2. Time for maximal level of sensory blockade
3. Time for Grade 4 motor blockade
4. Time for 2 segment regression
5. Time for rescue analgesia (epidural anaesthesia)
6. Pulse Rate, Blood Pressure, Mean Arterial Blood Pressure, Respiratory Rate, SpO2

Observation and Results:

The present comparative study was undertaken to assess the efficacy of intrathecal and epidural 0.5% Bupivacaine and 0.5% Levobupivacaine

for intraoperative and post- operative pain relief and to study incidence of side effects.

Table1.TIME OF ONSET

	BUPIVACAINE	LEVOBUPIVACAINE
MEAN	153.56	182.76
SD	41.38	24.34

The difference in the onset of analgesia is stastically significant showing that group B required longer duration of onset compared to group B .

TABLE 2. TIME FOR MAXIMUM SENSORY BLOCKADE

	BUPIVACAINE	LEVOBUPIVACAINE
MEAN	12.85	15.05
SD	3.88221	3.482345

It shows that Isobaric levobupivacaine takes longer time to reach highest sensory level compared to isobaric bupivacaine.

Table 3. TIME FOR MAXIMUM MOTOR BLOCK

	BUPIVACAINE	LEVOBUPIBVACAINE
MEAN	9.56	9.08
SD	1.97	2.4

The time for maximum motor blockade is similar in both the groups.

Discussion:

In the present study, 60 patients with ASA grade 1 & 2 of age group 20-50 years were selected and posted for surgery under combined spinal and epidural anesthesis for orthopaedic and gynaecological surgeries were divided into two groups .

Group A - received 3 ml (15mg) of 0.5% isobaric Bupivacaine
Group B - received 3 ml (15mg) of 0.5% isobaric Levo Bupivacaine .

The parameters measured in two groups included hemodynamic measurements (pulse rate, systolic blood pressure, diastolic blood pressure, and mean arterial blood pressure) respiratory rate, oxygen saturation, characteristics of sensory and motor block intra-operative and post-operative analgesia.

The demographic data compared the two groups were age ,height weight, and sex. The difference in the mean values of these parameters were not stastistically significant (P>0.05) among the two groups.

Time of onset of sensory blockade of 0.5% isobaric levobupivacaine is slower compared to 0.5% isobaric bupivacaine showing the mean of [153.56 ± 41.38 sec] with bupivacaine group compared to [182.76 ± 24.34 sec] with levobupivacaine group.

Time taken to reach highest sensory level in isobaric Bupivacaine Group was [12.85 ± 3.88 min] and in isobaric Levobupivacaine Group [15.05 ± 3.48 min] showing that isobaric levobupivacaine takes longer time to reach highest sensory level compared to isobaric bupivacaine.

Time taken to reach Grade 4 motor blockade was [9.56 ± 1.97 min] with Bupivacaine Group and [9.08 ± 2.4 min] Levobupivacaine Group concluding that both the drugs are equal in their action.

Time taken for 2 segment regression in Group I is [118 ± 19.83 min] compared to Group II [119.46 ± 15.23 min] conclude that the isobaric levobupivacaine and isobaric bupivacaine are similar in their action.

Time for rescue analgesia in Group I is [161.26 ± 15.01 min] compared to Group II [153.26 ± 12.71 min] showing no significant difference between the two groups.

Vital Parameters- There is no clinical significance between both the groups.

Results:

The time of onset, time taken to reach highest sensory level are significantly prolonged with Isobaric Levobupibvacaine compared to Isobaric Bupivacaine group.The time taken for grade 4 motor blockade, time for 2 segment regression and time for rescue analgesia did not vary among the two groups.There is no significant difference between both the groups with respect to hemodynamic variables like SPO2, respiratory rate, mean arterial pressure and heart rtae

Conclusion:

1. Based on the present clinical comparative study, we conclude that the efficacy of Intrathecal Isobaric Levobupivacaine is comparable to that of isobaric Bupivacaine for subarachnoid block.
2. No significant local anesthetic related complications were observed as the doses used were below the toxic doses and the drugs never entered the blood vessels. There is abundant evidence in literature from animal and human studies suggesting lower toxic profile of levobupivacaine in comparison to racemic bupivacaine.

It can be concluded by the present comparitive and statistically significant results that Isobaric Levobupivacaine is a safer alternative to isobaric bupivacaine for neuraxial block.

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