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Original Article

Comparison of Bupivacaine & Lignocaine for Elective Caesarean Section: A Clinical Study

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ABSTRACT

Background: Bupivacaine is indicated for local infiltration, peripheral nerve block, sympathetic nerve block, and epidural and caudal blocks. The present study was conducted to assess the efficiency of lignocaine and bupivacaine for elective caesarean section.

Materials & Methods: The present study was conducted in the department of Anesthesia, Dhanalakshmi Srinivasan Medical College & Hospital, Perambalur, Tamilnadu (India) on 40 women underwent elective cesarean. Group I received bupivacaine along with 1: 200000 adrenaline and group II received 2% lignocaine with 1: 200000 adrenaline. Efficacy of each anesthetic solution was recorded.

Results: In group I, pain intensity was none (10), mild (4), moderate (6), in group II, it was none (8), mild (6), moderate (5). The difference was significant (P<0.01). Response was excellent (12), very good (6), good (1), fair (1) and poor (0) in group I. Similarly, in group II, it was excellent (11), very good (7) and good (2). The difference was non- significant (P> 0.05).

Conclusion: Both bupivacaine and lignocaine was effective and efficient in terms of pain and discomfort in elective cesarean sections.

KEYWORDS: Adrenaline, Bupivacaine, Lignocaine.

INTRODUCTION

Lidocaine, also known as xylocaine is mixed with a small amount of adrenaline is available to allow larger doses for numbing, to decrease bleeding, and to make the numbing effect last longer. When used as an injectable, it typically begins working within four minutes and lasts for half an hour to three hours. Lidocaine mixtures may also be applied directly to the skin or mucous membranes to numb the area.[1]

Bupivacaine 0.5 % plain is the most commonly used agent for Caesarean section under extradural block. Bupivacaine is used by injecting it into the area, around a nerve that supplies the area, or into the spinal canal's epidural space. It is available mixed with a small amount of epinephrine to make it last longer. It typically begins working within 15 minutes and lasts for 2 to 8 hours.[2]

Bupivacaine is indicated for local infiltration, peripheral nerve block, sympathetic nerve block, and epidural and caudal blocks. It is sometimes used in combination with epinephrine to prevent systemic absorption and extend the duration of action. The 0.75% formulation is used in retrobulbar block. It is the most commonly used local anesthetic in epidural anesthesia during labor, as well as in postoperative pain management.[3] An increase in maternal request cesarean sections also plays a part. However, the rise in cesarean section rates should not be viewed in isolation from changes in society.[4] The present study was conducted to assess the efficiency of lignocaine and bupivacaine for elective caesarean section.

MATERIALS & METHODS

The present study was conducted in the department of Anesthesia, Dhanalakshmi Srinivasan Medical College & Hospital, Perambalur, Tamilnadu (India) on 40 women underwent elective cesarean. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained from institutional ethical committee.

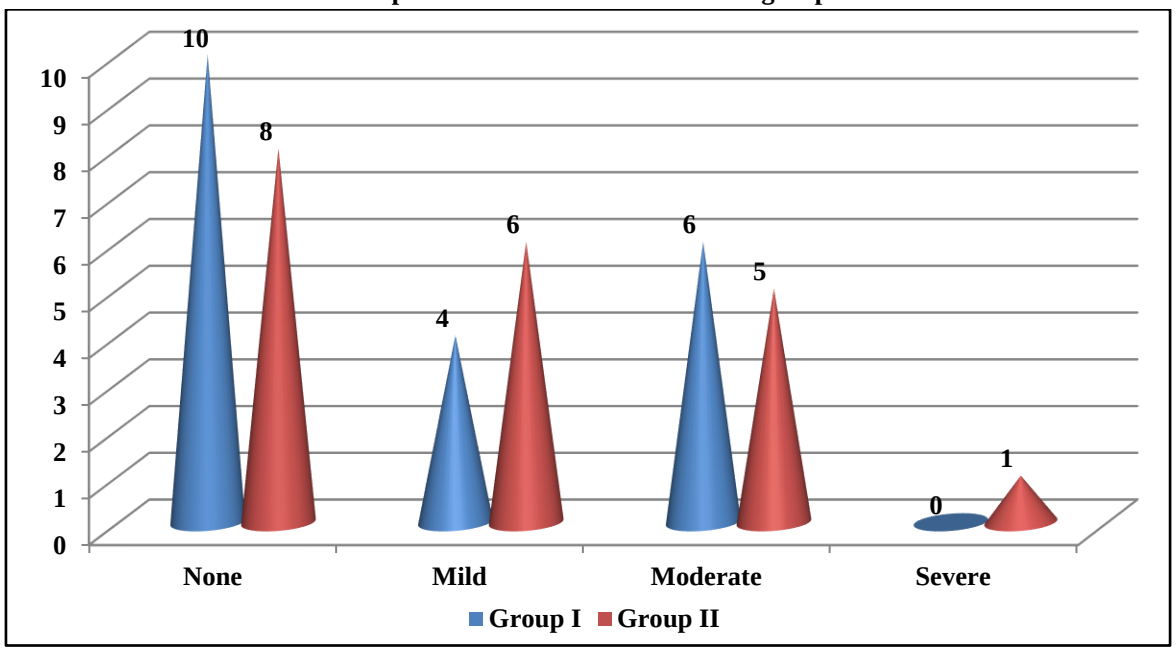
General information such as name, age, gender etc. was recorded. They were divided into 2 groups of 20 each.

Group I received 0.5% bupivacaine along with 1: 200000 adrenaline and group II received 2% lignocaine with 1: 200000 adrenaline. Efficacy of each anesthetic solution was recorded and results thus obtained were subjected to chi- square test. P value less than 0.05 was considered significant.

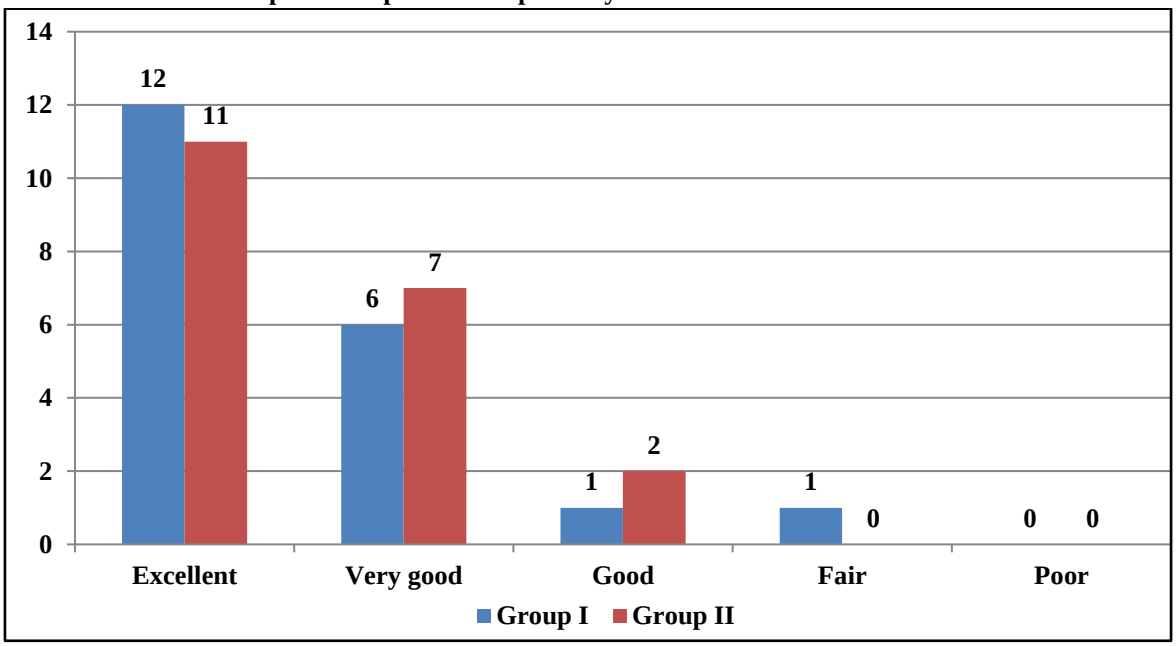
Table I: Distribution of patients

Group I	Group II
0.5% bupivacaine along with 1: 200000 adrenaline	2% lignocaine with 1:200000 adrenaline
20	20

Graph I: Pain or discomfort in each group



Graph II: Response of response by different anesthetic solutions



RESULTS

Table I shows that group I received 0.5% bupivacaine along with 1: 200000 adrenaline and group II received 2% lignocaine with 1: 200000 adrenaline. Graph I shows that in group I, pain intensity was none (10), mild (4), moderate (6), in group II, it was none (8), mild (6), moderate (5). The difference was significant (P<0.01). Graph I shows that response was excellent (12), very good (6), good (1), fair (1) and poor (0) in group I. Similarly, in group II, it was excellent (11), very good (7) and good (2). The difference was non- significant (P> 0.05).

DISCUSSION

Bupivacaine 0.5 % plain is the most commonly used agent for Caesarean section under extradural block. Dutton and colleagues[5] studied 0.75 % bupivacaine, but found that it offered no advantages over 0.5% bupivacaine plain. Other local anaesthetic agents have been used in the past. Bromage[6] demonstrated that the rate of spread of extradural 2 % lignocaine with adrenaline 1 in 200000 was faster than that of 0.5 % bupivacaine. This advantage was outweighed by evidence from neurobehavioural studies which found neonates to be floppy although alert, when the mothers had received extradural lignocaine for analgesia in labour. However, several more recent studies have failed to confirm adverse neonatal effects when extradural lignocaine was used for Caesarean section.

In present study we compared bupivacaine with lignocaine for elective caesarean section. Group I received 0.5% bupivacaine along with 1: 200000 adrenaline and group II received 2% lignocaine with 1: 200000 adrenaline. In group I, pain intensity was none (10), mild (4), moderate (6), in group II, it was none (8), mild (6), moderate (5). This is in agreement with Shamley et al.[7]

In previous studies, the quality of the block produced by lignocaine with adrenaline was considered similar to that of bupivacaine, with or without adrenaline. Bupivacaine binds to the intracellular portion of voltage-gated sodium channels and blocks sodium influx into nerve cells, which prevents depolarization. Without depolarization, no initiation or conduction of a pain signal can occur. Bupivacaine crosses the placenta and is a pregnancy category C drug. However, it is approved for use at term in obstetrical anesthesia. Bupivacaine is excreted in breast milk.[8]

We found that response was excellent (12), very good (6), good (1), fair (1) and poor (0) in group I. Similarly, in group II, it was excellent (11), very good (7) and good (2). A study by Howel et al[9] shows that a mixture of bupivacaine and lignocaine provided an excellent alternative to bupivacaine alone, and was superior to 2% lignocaine with adrenaline for elective caesarean section. By reducing the dose of bupivacaine used, the combination may reduce the risk of cardiotoxicity.

The efficacy profile of lidocaine as a local anaesthetic is characterized by a rapid onset of action and intermediate duration of efficacy. Therefore, lidocaine is suitable for infiltration, block, and surface anesthesia. Longer-acting substances such as bupivacaine are sometimes given preference for spinal and epidural anesthesias; lidocaine, though, has the advantage of a rapid onset of action. Adrenaline vasoconstricts arteries, reducing bleeding and also delays the resorption of lidocaine, almost doubling the duration of anesthesia. In a study by Palake[10] patients who received epidural anesthesia had significantly longer total operating room (OR) times than those who received spinal anesthesia (101 + 20 vs 83 + 16 min. This was caused by longer times spent in the OR until surgical incision.

CONCLUSION

Both bupivacaine and lignocaine was effective and efficient in terms of pain and discomfort in elective cesarean sections.

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