

ORIGINAL ARTICLE**Efficacy of supraclavicular brachial plexus block with or without dexamethasone**

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ABSTRACT:

Background: Peripheral neural blockade is now a well-accepted component of post-operative pain management. The present study was conducted to evaluate efficacy of supraclavicular brachial plexus block with or without dexamethasone as an adjuvant to 0.5% levobupivacaine. **Materials & Methods:** 60 patients with ASA physical status I or II of both genders were divided into two groups of 30 each. In group I, patients received 30 ml of 0.5% isobaric levobupivacaine with 2 ml of isotonic sodium chloride. In group II, patients received 8mg (2ml) dexamethasone in addition to 30 ml of 0.5% isobaric levobupivacaine. Parameters such as duration of surgery, onset of sensory blockade, motor block, duration of sensory blockade, motor blockage and total analgesic requirement were recorded. **Results:** Group I had 15 males and 15 females and group II had 14 males and 16 females. The mean duration of surgery was 70.6 minutes in group I and 83.2 minutes in group II, onset of sensory blockade was 11.4 minutes in group I and 9.1 minutes in group II, onset of motor blockade was 16.7 minutes and 14.2 minutes, duration of sensory blockade was 650.2 minutes and 920.6 minutes, duration of motor blockade was 570.6 minutes and 768.2 minutes and total analgesic requirement was 20 and 5 in in group I and in group II respectively. The difference was significant ($P < 0.05$). **Conclusion:** Dexamethasone prolonged the duration of analgesia and reduced the time to onset of sensory and motor blockage.

Key words: Dexamethasone, Brachial plexus, levobupivacaine

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INTRODUCTION

Brachial plexus block is an excellent method for attaining optimal operating conditions for upper limb surgeries by producing complete muscular relaxation, maintaining haemodynamic stability and the associated sympathetic block. They also provide extended postoperative analgesia with minimal side effects. In addition, it offers a better preservation of mental functions in elderly; decreased risk of aspiration due to intact pharyngeal and laryngeal reflexes.¹

Peripheral neural blockade is now a well-accepted component of post-operative pain management.² Ultrasound-guided supraclavicular brachial plexus (SCBP) block provides not only intraoperative anaesthesia and post-operative analgesia but also reduce many complications like intravascular injection.¹ Steroids have nerve block prolonging effects by blocking transmission of nociceptive myelinated c-fibres and suppressing ectopic neuronal discharge.³

Various pharmacokinetic, animal and clinical studies not only confirm the cardiac toxicity of racemic bupivacaine but experimental studies with levobupivacaine also indicate lower cardiovascular depressant effect and central nervous system toxicity.⁴ Levobupivacaine has less systemic toxicity than bupivacaine.³ Its limiting factors are late onset

and limited duration of analgesia even when used with adjuvants like opioids that produce opioid-related side effects.⁵ Studies have shown that dexamethasone can prolong the effect of regional anaesthesia. Dexamethasone as an adjuvant may avoid opioid-related side effects.⁶ The present study was conducted to evaluate efficacy of supraclavicular brachial plexus block with or without dexamethasone as an adjuvant to 0.5% levobupivacaine.

MATERIALS & METHODS

The present study comprises of 60 patients with ASA physical status I or II of both genders. All patients were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into two groups of 30 each. In group I, patients received 30 ml of 0.5% isobaric levobupivacaine with 2 ml of isotonic sodium chloride. In group II, patients received 8mg (2ml) dexamethasone in addition to 30ml of 0.5% isobaric levobupivacaine. Parameters such as duration of surgery, onset of sensory blockade, motor block, duration of sensory blockade, motor blockage and total analgesic requirement were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Drug	30ml of 0.5% isobaric levobupivacaine+ 2ml of isotonic sodium chloride	8mg dexamethasone + 30ml of 0.5% isobaric levobupivacaine
M:F	15:15	14:16

Table I shows that group I had 15 males and 15 females and group II had 14 males and 16 females.

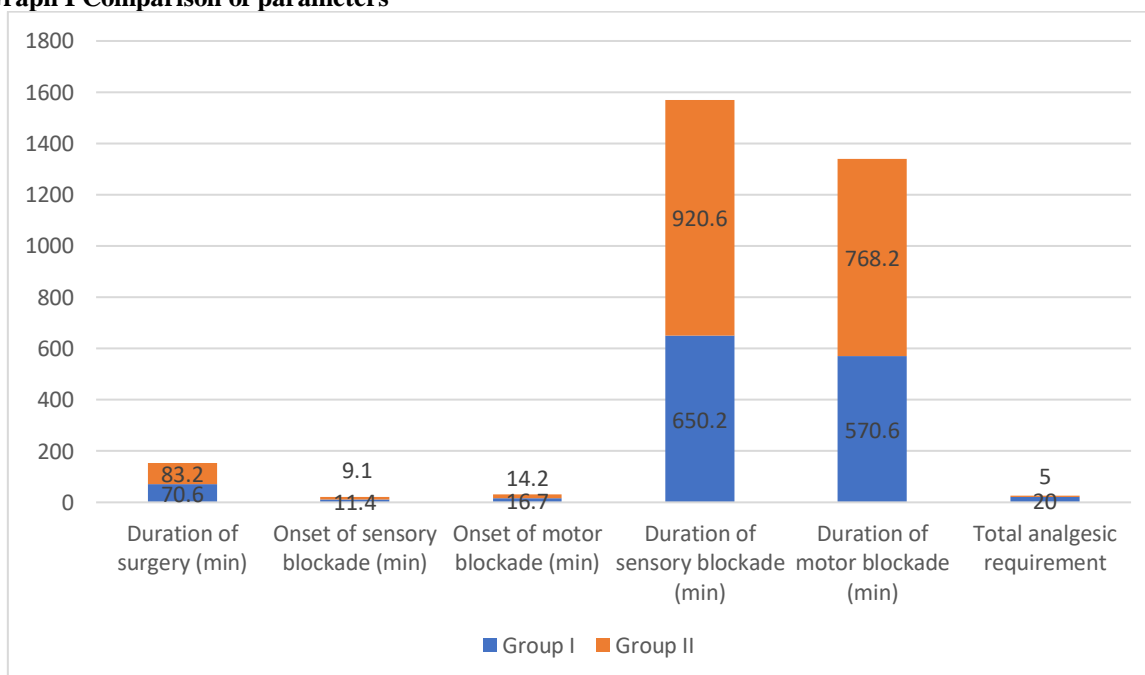
Table II Comparison of parameters

Parameters	Group I	Group II	P value
Duration of surgery (min)	70.6	83.2	0.05
Onset of sensory blockade (min)	11.4	9.1	0.04
Onset of motor blockade (min)	16.7	14.2	0.09
Duration of sensory blockade (min)	650.2	920.6	0.02
Duration of motor blockade (min)	570.6	768.2	0.03
Total analgesic requirement	20	5	0.001

Table II, graph I shows that mean duration of surgery was 70.6 minutes in group I and 83.2 minutes in group II, onset of sensory blockade was 11.4 minutes in group I and 9.1 minutes in group II, onset of motor blockade was 16.7 minutes and 14.2 minutes, duration

of sensory blockade was 650.2 minutes and 920.6 minutes, duration of motor blockade was 570.6 minutes and 768.2 minutes and total analgesic requirement was 20 and 5 in in group I and in group II respectively. The difference was significant (P< 0.05).

Graph I Comparison of parameters



DISCUSSION

Dexamethasone, a long-acting glucocorticoid has proven its efficacy as an adjuvant to local anaesthetics in brachial plexus block.⁷ It produces vasoconstriction and reduces the absorption of local anaesthetics and thereby prolongs the action of local anaesthetics.⁸ Many other studies reported the prolonged duration of sensory and motor block when dexamethasone was used as an adjuvant with bupivacaine and lignocaine in brachial plexus block, but they differed regarding the onset of sensory and motor block.^{9,10}The present study was conducted to evaluate efficacy of supraclavicular brachial plexus block with or without

dexamethasone as an adjuvant to 0.5% levobupivacaine.

We observed that group I had 15 males and 15 females and group II had 14 males and 16 females. Pathak RG et al¹¹ has compared supraclavicular brachial plexus block with and without dexamethasone using a mixture of 1.5% adrenalized xylocaine (20ml) and 0.5% Bupivacaine (16ml) and concluded that addition of dexamethasone to mixture of local anaesthetic drugs in the brachial plexus block through supraclavicular approach has significantly prolonged motor blockade and duration of postoperative analgesia.

We found that mean duration of surgery was 70.6 minutes in group I and 83.2 minutes in group II, onset of sensory blockade was 11.4 minutes in group I and 9.1 minutes in group II, onset of motor blockade was 16.7 minutes and 14.2 minutes, duration of sensory blockade was 650.2 minutes and 920.6 minutes, duration of motor blockade was 570.6 minutes and 768.2 minutes and total analgesic requirement was 20 and 5 in in group I and in group II respectively. Biradar et al¹² added dexamethasone to lidocaine in supraclavicular brachial plexus block and concluded that addition of Dexamethasone to 1.5% Lidocaine with Adrenaline in supraclavicular brachial plexus block reduced the onset time of sensory and motor blockade and prolonged the duration of postoperative analgesia and motor blockade. Persec et al¹³ had done randomized controlled study, assessed 70 patients undergoing upper-extremity surgeries using ultrasound-guided single-shot supraclavicular blockade and investigated the analgesic effect of low dose dexamethasone added to levobupivacaine. Shrestha et al¹⁴ confirmed that addition of dexamethasone leads to significantly faster onset of action and prolonged duration of analgesia for brachial plexus block, without any unwanted side effects.

CONCLUSION

Authors found that dexamethasone prolonged the duration of analgesia and reduced the time to onset of sensory and motor blockage.

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