25

Original article

"THE EFFICACY OF DEXAMETHASONE ADDED AS AN ADJUVANT TO LOCAL ANESTHETIC IN BRACHIAL PLEXUS BLOCK FOR POST OPERATIVE ANALGESIA"

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ABSTRACT

Introduction: *Regional anesthesia techniques like brachial plexus block for upper limb surgeries provide excellent anesthesia and post operative analgesia. Local anesthetic adjuvants like dexamethasone prolong the duration of analgesia with less side effects.*

Aims and objectives:

• *To observe the onset of sensory and motor blockade*

• *To observe duration of motor blockade*

• *To observe duration analgesia*

• *To observe perioperative hemodynamic stability.*

• *To observe perioperative adverse effects and complications.*

Materials and methods: *supraclavicular block was given to two Group of patients using ultrasonography guidance. Group S: Patients who received 0.5% bupivacaine 23 ml plus 0.9% normal saline 2 ml making a total volume of 25 ml were included in Group S.*

Group D: Patients who received 0.5% bupivacaine 23 ml plus dexamethasone

8 mg (2 ml) making a total volume of 25 ml were included in Group D .

Sensory block; motor block; hemodynamic repsonse; post op analgesia was observed.

Conclusion: *In conclusion, adding Dexamethasone (8mg) as an adjuvant to 0.5% bupivacaine in ultrasound guided supraclavicular brachial plexus block results in faster onset of sensory and motor block with the significant prolongation of duration of motor block and post operative analgesia without any side effects.*

Keywords : *supraclavicular block, ultrasound guided, bupivacaine, dexamethasone*

INTRODUCTION

Postoperative pain is a combination of unpleasant sensory, emotional and mental experience precipitated by the surgical trauma. Postoperative pain is associated with sleep disturbance, cardiovascular side effects, increased oxygen consumption. It also delay mobilization and promotes thromboembolism. Thus good postoperative pain management is a mainstay of good perioperative care. Regional anaesthesia techniques provide important advantages compared with general anaesthesia and systemic analgesia, including excellent pain control and reduced side-effects. For upper extremities surgery regional anaesthesia technique in the form of brachial plexus block is the technique of choice for anaesthesia and postoperative analgesia.

The use of brachial plexus block as the primary anaesthetic technique decreases immediate postoperative pain, provide better analgesia and reduce opioid consumption.

Single shot local anesthetics have short duration of action. Local anaesthetic adjuvants act by several mechanisms. They may cause local vasoconstriction limiting systemic uptake or they may have direct effects on peripheral nerves. In addition, they may also act systemically by anti-inflammatory effects.

It is widely believed that dexamethasone improves the quality and duration of peripheral nerve block over local anaesthetic alone. This is thought to be mediated by attenuating the release of inflammatory mediators, reducing ectopic neuronal discharge, and inhibiting potassium channel-mediated discharge of nociceptive c-fibres.

AIMS OF STUDY

Present study was designed to evaluate the efficacy of dexamethasone (8 mg) as an adjuvant to bupivacaine (0.5%) in USG guided supraclavicular brachial plexus block for postoperative analgesia in surgeries of upper extremities with the following objectives:

• To observe the onset of sensory and motor blockade

• To observe duration of motor blockade

• To observe duration analgesia

• To observe perioperative hemodynamic stability.

• To observe perioperative adverse effects and complications.

MATERIAL AND METHOD

This study was conducted in department of Anaesthesiology between September 2015 and September 2017. After taking thorough history and pre-operative assessment, 60 patients who were satisfying the inclusion criteria were enrolled into the study.

<u>The Inclusion Criteria were:</u>

Patients aged between 18 and 60 years

Patients with American Society of Anesthesiologists I & II physical status

Patients who were planned to undergo below shoulder upper limb surgeries (both elective and emergency) under supraclavicular brachial plexus block.

The Exclusion Criteria were:

- Patients who refused to give consent
- Pregnant women,
- History of local anesthetics allergy
- Peptic ulcer disease
- Diabetes mellitus
- Peripheral neuropathy

Patients with contraindications for brachial plexus block like

- bleeding disorder,
- Patients on anticoagulants,
- Severe respiratory disease,
- neurological deficit involving brachial plexus
- local infection at the injection site

After explaining the procedure properly in their native language, a written informed consent was taken from all the patients of the study. Each patient was explained in detail regarding the procedure of anaesthesia and 0-10 point VISUAL ANALOGUE SCALE (VAS) on a sheet of paper where score of 0 labelled as no pain and 10 as worst possible pain. In the pre-operative room, intravenous access was secured with 18-gauge cannula on the contralateral hand and

baseline parameters such as heart rate, systolic & diastolic blood pressure, oxygen saturation was observed and recorded.

Anaesthetic technique:

The supraclavicular brachial plexus block was carried out after thorough explanation of the procedure to the patient. In the operation theater, monitors were connected like pulse oximetry, ECG and NIBP. Supraclavicular brachial plexus block was performed under aseptic precautions with the patient in the supine position, with the patient's head turned away from the side to be blocked. The arm to be anaesthetized is adducted and the hand extended along the side towards the ipsilateral knee as far as possible. We used Ultrasound machine with linear transducer for localization of the brachial plexus. The skin is disinfected and the transducer is positioned in the transverse plane immediately proximal to the clavicle, slightly posterior to its midpoint. The transducer is tilted caudally, to obtain a cross-sectional view of the subclavian artery . The brachial plexus is seen as a collection of hypoechoic oval structures posterior and superficial to the artery. The 23 gauge 1.5 inch hypodermic needle was then inserted in plane toward the brachial plexus, in a lateral to medial direction. Upon visualising needle path to the desired location, the study local anesthetic mixture was injected after negative aspiration for blood and air. End of injection was considered as time 0.

Patients were divided in to two groups according to the local anesthetic mixture they received.

Group S: Patients who received 0.5% bupivacaine 23 ml plus 0.9% normal saline 2 ml making a total volume of 25 ml were included in Group S.

Group D: Patients who received 0.5% bupivacaine 23 ml plus dexamethasone 8 mg (2 ml) making a total volume of 25 ml were included in Group D .

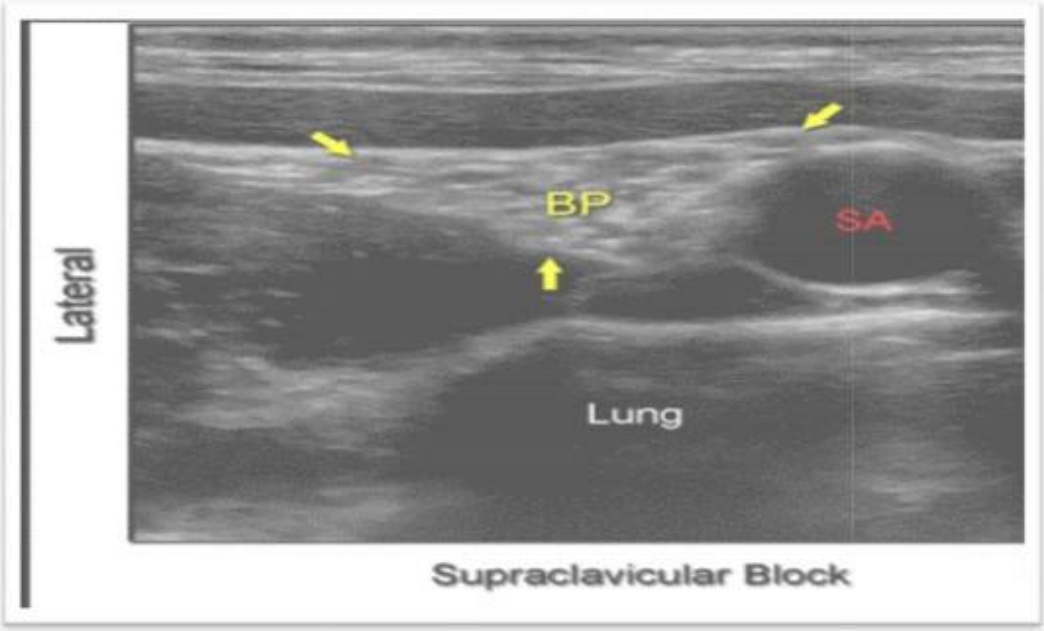

Figure 2 : Supraclavicular brachial plexus; transducer position and needle insertion

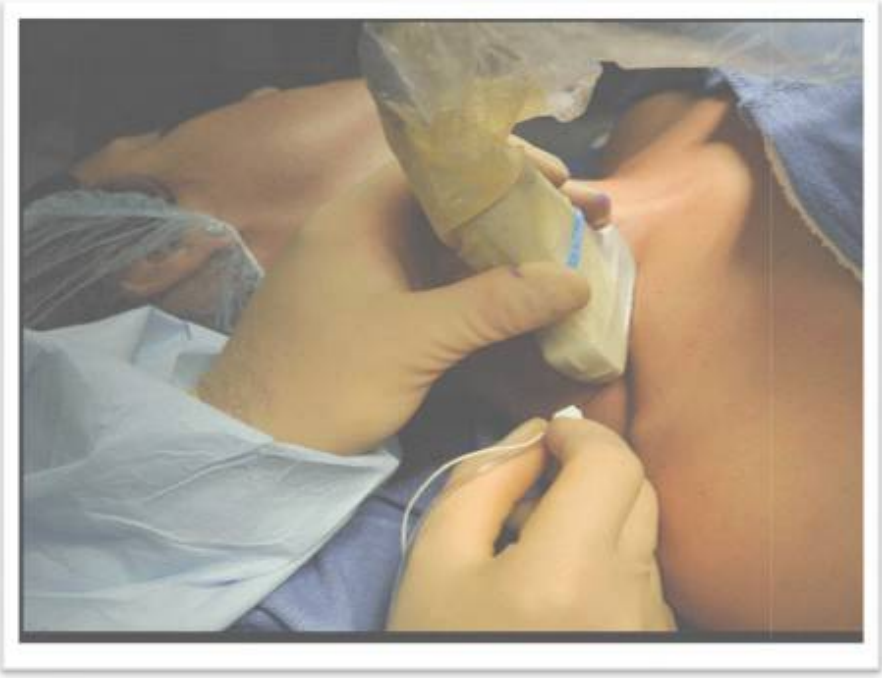

Figure 3: Ultrasound image of the brachial plexus (BP) assuming an oval shape and circled by the tissue sheath (yellow arrows)

During the conduct of block and thereafter, the patients were observed for any complications and toxicity of the drugs injected. After injection of the local anaesthetic, the following parameters were studied:

Sensory block characteristic in each of the major peripheral nerve distribution (ulnar, radial, medial and musculocutaneous) was assessed by pinprick using the blunt end of a 23-gauge needle.

Sensory block was graded according to the following scale: Grade 0 = no block (normal sensation)

Grade 1 = partial block (decreased sensation) Grade 2 = complete block (no sensation)

Onset of sensory blockage was defined as the time from the end of injection to grade 1 sensory blockage.

Peak(complete) of sensory blockage was defined as the time from the end of injection to grade 2 sensory blockage.

Motor block characteristic was measured by assessing the following motor functions: flexion at the elbow (musculocutaneous nerve), extension of the elbow and the wrist (radial nerve), opposition of the thumb and index finger (median nerve), and opposition of the thumb and small finger (ulnar nerve). Motor block was graded according to the following scale:

Grade 0 = no block (full muscle activity)

Grade 1 = partial block (decreased muscle activity)

Grade 2 = complete block (no muscle activity).

Onset of motor blockage was defined as the time from the end of injection to grade 1 motor blockage.

Peak (complete) of motor blockage was defined as the time from the end of injection to grade 2 motor blockage.

Only patients with complete motor and sensory block were included in the study.

Hemodynamic vitals (Pulse rate, blood pressure, SpO2) were recorded at 1,5,10, 15, 30, 45, 60, 90, 120, 150 mins till the end of surgery from the end of injection of local anaesthetics.

Intraoperative complications like hypotension (Fall in systolic blood pressure >30% from the baseline), Bradycardia (Heart rate < 60/min), nausea and vomiting, hoarsness of voice were observed.

Total duration of each case was noted.

Post-operative follow-up was carried out in the recovery and post-operative ward. Hemodynamic vitals (Pulse rate, blood pressure, SpO2) and the duration of analgesia according to 0-10 visual analogue score (VAS) for pain were noted till 24 hrs. Motor block was assessed by asking the patients to move their fingers and to flex the elbow. When the patients began to experience pain (VAS $\geq$ 4), it was considered that analgesic action of the drugs was terminated, and rescue analgesic in the form of injection diclofenac 1-1.5 mg/kg iv was given.

Duration of motor block was defined as the time elapse between the end of drug injection to move their fingers and elbow flexion.

Duration of analgesia was defined as time elapse between the end of injection to when patient experiencing the pain of VAS $\geq$ 4 severity.

Possible complications of brachial plexus block such as pneumothorax, hematoma, signs and symptoms for local anesthetic toxicity was looked for and treated, if any.

Results were expressed as Mean ± SD (standard deviation). Statistical analysis was performed using z test for intergroup comparison. $p< 0.05$ was considered as statistically significant.

OBSERVATIONS AND RESULTS

After studying 60 cases, observation and results are summarized in tabulated form and described below. Each group contains 30 patients.

TABLE 1

Demographic Data

Parameters	Group S	Group D	P value
Age (yrs)	36.53±11.22	38.33± 11.89	P>0.05
Weight(kg)	65.83±3.00	66.86±4.74	P>0.05
Sex (male/female)	22/08	22/08	Not significant
ASA grade (I/II)	23/7	23/07	Not significant

Table 1 shows demographic data of two groups.

Patients in Group S and Group D were comparable with the respect to the patients age, weight, sex ,ASA status and duration of surgery.

TABLE 2

Duration of Surgery

	Group S	Group D	P value
Duration of surgery(min)	106±26.92	110±27.41	P >0.05

Table 2 shows the mean duration of surgery which are comparable between both Groups

TABLE 3

Onset of sensory and motor block

Parameters	Group S	Group D	P value
Onset of sensory block(min)	4.33±0.88	3.73±0.90	P <0.05
Onset of motor block(min)	6.03±0.71	5.13±0.97	P<0.05

Table 3 shows mean time of onset of sensory and motor block.

The onset of sensory and motor blockade were significantly more rapid in the Group D (3.73±0.90 vs. 4.33±0.88 min and 5.13±0.97 vs. 6.03±0.71 min, respectively) than in the Group S (P<0.05).

TABLE 4

Peak of sensory and motor block

Parameters	Group S	Group D	P value
Peak of sensory block(min)	11.96±0.80	9.63±0.96	P <0.05
Peak of motor block(min)	16.13±1.30	12.9±1.12	P<0.05

Table 4 shows mean time to achieve peak (complete) sensory and motor block.

The time to achieve peak (complete) sensory and motor blockade were significantly more rapid in the Group D (9.63±0.96 vs. 11.96±0.80) min and 12.9±1.12 vs.16.13±1.30 min, respectively) than in the Group S (P<0.05).

TABLE 5

Duration of motor block and time to first rescue analgesia

Parameters	Group S	Group D	P value
Duration of motor block(min)	482.16±34.23	619.83±32.94	P <0.05
Time to first rescue analgesia(min)	609.66±35.52	1062.83±56.95	P<0.05

Table 5 shows mean time of duration of motor block and mean time to first rescue analgesia. The duration of motor blockade and time to first rescue analgesia were significantly longer in the Group D (619.83±32.94 vs. 482.16±34.23 min and 1062.83±56.95 vs. 609.66±35.52 min, respectively) than in the Group S (P<0.05).

TABLE 6

PERIOPERATIVE PULSE RATE (per min)

TIME	GROUP S	GROUP D	P- VALUE
PRE OPERATIVE	89.7±5.66	90.8±5.07	P>0.05
AFTER BLOCK			
1 MIN	88.8±5.58	89.93±5.11	P > 0.05
5 MIN	86.26±5.40	88.10±4.80	P > 0.05
10 MIN	83.93±5.19	85.3±4.17	P > 0.05
15 MIN	81.83±4.92	82.7±3.70	P > 0.05
30 MIN	79.6±4.72	80.46±3.83	P > 0.05
45 MIN	79.06±4.75	80.53±4.15	P > 0.05
60 MIN	79.56±4.84	80.73±5.26	P > 0.05

90 MIN	78.76±4.51	79.7±5.46	P > 0.05
120 MIN	81.16±5.44	80.13±4.45	P > 0.05
150 MIN	80.83±5.29	81.06±4.45	P > 0.05
180 MIN	79.73±5.71	78.7±4.47	P > 0.05
240 MIN	80.3±4.01	81.7±4.76	P > 0.05
300 MIN	80.23±5.25	82.9±4.58	P > 0.05
360 MIN	82.26±4.09	82.6±5.86	P > 0.05
420 MIN	82.13±4.97	81.13±6.15	P > 0.05
480 MIN	83.13±4.84	84.26±7.00	P > 0.05
600 MIN	83.36±5.30	82.86±6.44	P > 0.05
720 MIN	84.66±6.79	84.46±6.24	P > 0.05
840 MIN	85.66±7.59	84.13±6.20	P > 0.05
960 MIN	85.53±6.59	86.9±4.95	P > 0.05
1080 MIN	86.13±5.11	87.13±5.34	P > 0.05
1200 MIN	86.33±7.02	85.06±5.10	P > 0.05
1440 MIN	85.2±7.95	84.13±5.61	P > 0.05

Table 6 shows mean pulse rate of patients in perioperative period.

There was no significant difference in mean pulse rate of patients of both the groups (P>0.05) and pulse rate were stable and comparable between two groups.

MEAN PULSE RATE

TABLE 7

PERI OPERATIVE SYSTOLIC BLOOD PRESSURE(mmHg)

TIME	GROUP S	GROUP D	P- VALUE
PRE OPERATIVE	127.07±9.25	126.3±10.8	P>0.05
AFTER BLOCK			
1 MIN	126.03±9.08	125.1±10.23	P > 0.05
5 MIN	124.13±8.64	123.43±10.64	P > 0.05
10 MIN	123.14±7.80	122.43±10.47	P > 0.05
15 MIN	121.77±7.48	120.4±7.70	P > 0.05
30 MIN	120.9±8.01	119.37±7.74	P > 0.05
45 MIN	121.27±7.34	119.03±6.99	P > 0.05
60 MIN	117.87±6.10	118.27±5.81	P > 0.05
90 MIN	117.87±6.19	119.9±6.54	P > 0.05
120 MIN	118.47±4.26	119.3±5.52	P > 0.05
150 MIN	119.17±4.41	119.87±6.63	P > 0.05
180 MIN	120.60±5.80	123.13±6.38	P > 0.05
240 MIN	121.07±4.77	119.93±5.05	P > 0.05
300 MIN	119.4±4.32	119.43±4.09	P > 0.05
360 MIN	119.5±4.79	121.13±4.59	P > 0.05
420 MIN	120.4±7.79	120.9±3.52	P > 0.05
480 MIN	118.8±7.34	118.83±6.23	P > 0.05
600 MIN	121.33±7.39	119.57±7.29	P > 0.05
720 MIN	118.8±6.97	119.27±5.92	P > 0.05

840 MIN	120±6.19	121.07±7.62	P > 0.05
960 MIN	118.6±7.61	120.07±8.17	P > 0.05
1080 MIN	120.8±8.76	120.53±5.50	P > 0.05
1200 MIN	120.87±8.01	123.93±6.83	P > 0.05
1440 MIN	120.67±8.05	124.93±7.36	P > 0.05

Table 7 shows mean systolic blood pressure of patients in perioperative period. There was no significant difference in mean systolic blood pressure of patients of both the groups(P>0.05) and systolic blood pressure were stable and comparable between two groups.

MEAN SYSTOLIC BLOOD PRESSURE

TABLE 8

PERIOPERATIVE DIASTOLIC BLOOD PRESSURE(mmHg)

TIME	**GROUP S**	**GROUP D**	**P- VALUE**
PRE OPERATIVE	81.13±4.38	80.2±5.46	
AFTER BLOCK			
1 MIN	80.1±3.75	78.56±3.86	P > 0.05
5 MIN	78.06±3.62	77.93±6.13	P > 0.05
10 MIN	78.03±3.19	77.16±4.63	P > 0.05
15 MIN	77.34±3.07	76.76±4.35	P > 0.05
30 MIN	77.73±5.17	78.9±3.70	P > 0.05
45 MIN	77.73±5.69	78.73±4.21	P > 0.05
60 MIN	78.06±5.15	79.23±4.02	P > 0.05
90 MIN	79.1±6.26	80.96±3.72	P > 0.05

120 MIN	79.4±5.02	80.56±3.69	P > 0.05
150 MIN	80.13±3.69	81.13±3.94	P > 0.05
180 MIN	81.33±3.97	80.56±3.40	P > 0.05
240 MIN	79.93±3.68	81.06±4.29	P > 0.05
300 MIN	79.93±3.80	80.13±3.66	P > 0.05
360 MIN	78.26±3.92	79.2±3.34	P > 0.05
420 MIN	79.13±4.38	80.43±4.49	P > 0.05
480 MIN	77.37±4.44	78.83±3.96	P > 0.05
600 MIN	78.06±4.96	79.36±3.68	P > 0.05
720 MIN	79.17±3.79	80.23±3.53	P > 0.05
840 MIN	80.1±2.97	81.06±3.87	P > 0.05
960 MIN	79.31±3.79	78.63±3.80	P > 0.05
1080 MIN	78.93±5.57	79.76±3.47	P > 0.05
1200 MIN	80.17±4.48	79.53±3.53	P > 0.05
1440 MIN	79.26±3.58	80.76±4.47	P > 0.05

Table 8 shows mean Diastolic blood pressure of patients in perioperative period.

There was no significant difference in mean Diastolic blood pressure of patients of both the groups (P>0.05) and Diastolic blood pressure were stable and comparable between two groups.

MEAN DIASTOLIC BLOOD PRESSURE

TABLE 9

PERIOPERATIVE COMPLICATIONS

COMPLICATION	GROUP S	GROUP D	INFERENCE

NAUSEA	0	0	NS
VOMITING	0	0	NS
HYPOTENSION	0	0	NS
BRADYCARDIA	0	0	NS
LOCAL HAEMATOMA	0	0	NS
PNEUMOTHORAX	0	0	NS
SURGICAL EMPHYSEMA	0	0	NS
NERVE INJURY	0	0	NS

Table 9 shows the incidence of perioperative complications in both group patients.

There was no major perioperative complications in either group of patients.

DISCUSSION

Brachial plexus block is a popular and widely employed peripheral nerve block technique for perioperative anaesthesia and analgesia for surgeries of upper extremity and supraclavicular approach is the easiest and most consistent method for surgeries below shoulder joint.

For below shoulder surgeries of upper extremities supraclavicular brachial plexus block alone as a sole anesthetic technique provides good operative condition but have shorter duration of post operative analgesia.

Steroids have powerful anti inflamatory as well as analgesic property. Dexamethasone is a very potent and highly selective glucocorticoid. Various studies have been done using dexamethasone (8 mg) as an adjuvant to local anesthetic mixture in brachial plexus block resulting in variable effect on onset but prolonged duration of analgesia and motor block.

The safety profile of dexamethasone is promising and no trail has reported neurotoxicity attributable to it. Corticosteroids have been used safely in epidural space for the treatment of radicular pain arising from nerve root irritation 33 and dexamethasone specifically has been studied as an adjuvant to epidural local anesthetic.25and no nuerological risk found.

In above context the present study was performed to evaluate the efficacy of dexamethasone (8mg) used as an adjuvant to 0.5% bupivacaine in USG guided supraclavicular brachial plexus block for postoperative analgesia.

Demographic data:

Table 1 shows demographic data in terms of age, weight, sex, ASA status of the patients which were comparable in both the groups.

Duration of surgery:

Table 2 shows the mean duration of surgery

In our study the mean duration of surgery in Group S was 106±26.92 mins and 110±27.41 min in group D which was statistically insignificant. (P>0.05)

Characteristic of sensory and motor block :

Characteristic of onset of sensory and motor block:

Table 3 shows the characteristic of onset of sensory and motor block.

In our study, the mean time of onset of sensory block in group S was 4.33 ±0.88 min. and group D was 3.73±0.90 min. The mean time of onset of motor block in group S was 6.03±0.71 min. and group D was 5.13±0.97 min. The onset of sensory block and motor block was significantly faster in dexamethasone group compared with saline group.($p < 0.05$)

M.P. Golwala et al18 in their study also reported the mean time of onset of sensory block in control group was 275.66±30.32 sec and in dexamethasone receiving group was 196.33±26.45 sec. The mean time of Onset of motor block in control group was 326.66±27.20 sec and in dexamethasone receiving group was 225.66±26.86 sec.

Both time of onset of sensory and motor block was faster in dexamethasone group compaired with saline group and difference was statistically significant.($p<0.05$)

Yadav RK et al45 in their study reported that the time of onset of sensory block was faster in dexamethasone group (3.8+1.8 min) than control group (4.6+1.1 min). Similarly time onset of motor block was also faster in dexamethasone group (6.0+2.1 min) than control group (7.7+2.0 min). So, time to onset of sensory and motor block were significantly faster in dexamethasone group as compare to control group. These were statistically significant.

Shrestha BR, et al 39 reported onset of action of 10-30 min (mean 18.15±4.25 min) in local anaesthetic group and 10-20 min (mean14.15±2.10 min) in local anaesthetic + dexamethasone group and found it statistically significant ($p < 0.05$).

Characteristic of peak of sensory and motor block :

Table 4 shows the characteristics of peak of sensory and motor block

In our study mean time to achieve peak of sensory block in group S was 11.96±0.80 min and group D was 9.63±0.96 min. The mean time to achieve Peak of motor block in group S was 16.13±1.30 min and group D was 12.9±1.12 min. The time to achieve peak sensory block and motor block was significantly faster in dexamethasone group compared with saline group. ($p<0.05$)

M.P. Golwala et al18 in their study reported mean peak effect time of sensory and motor block was 708.33 ± 50.58 sec and 767.33 ± 47.26 sec in control group and 544.33 ± 47.68 sec and 651.33 ± 38.75 sec in dexamethasone receiving group respectively. The mean time of peak of sensory block and motor block was significantly faster in dexamethasone group and statistically significant.($p < 0.05$) like our study.

Prashant A. Birader et al9 in their study reported mean time of peak onset of sensory and motor blockade were significantly more rapid in the dexamethasone group (13.4±2.8 vs.16±2.3 min and 16.0±2.7 vs. 18.7±2.8 min, respectively) than in the control group which was statistically significant ($P<0.001$).

Yadav RK et al45in their study reported the time to complete sensory and motor block was significantly faster in dexamethasone group as compared to control group.

Results of our study are comparable to above studies.

Characteristic of Duration of motor block and time of 1st rescue analgesia:

In our study, mean time of duration of motor block and mean time for 1st rescue analgesia in group S was 482.46±34.23 min & 609.66±35.52min and in group D was 619.83±32.94 min & 1062.83±56.95 min ,respectively. The mean time of duration of motor block and mean time of first rescue analgesia was longer in dexamethasone group as compared to saline group which were statistically significant. ($p< 0.05$).

Our results demonstrate that dexamethasone significantly prolongs analgesic effect of plain bupivacaine(0.5%) used as a single injection in supraclavicular block.

In our study dexamethasone prolongs the duration of analgesia 1.7 times when used as an adjuvant to 0.5% bupivacaine.

Adjuvant dexamethasone significantly prolonged the duration of analgesia in all reviewed studies regardless of the local anesthetic agent used or type of block performed.USG guided

supraclavicular brachial plexus block provides a better quality of block than supraclavicular block using anatomic landmarks and neurostimulator confirmation.43 While dexamethasone used as an adjuvant in brachial plexus blocks clearly prolongs the duration.

The mechanism of dexamethasone induced prolongation of peripheral nerve blockade is not well understood. Dexamethasone alone does not exhibit analgesic effects when incorporated into microspheres.11 It is commonly attributed to its anti-inflammatory action. This is supported by the finding that the degree of block prolongation had the same rank order as the relative anti-inflammatory potencies of glucocorticoids and is completely reversed by administration of a specific glucocorticoid receptor antagonist.11,13 These effects are therefore mediated via the classic glucocorticoid receptor and are local effects rather than systemic since incorporation of dexamethasone has not been shown to alter kinetics of bupivacaine release from microcapsules.11 Action on glucocorticoid receptor is proposed to alter the functioning of ion channels or produce local acidosis in nerve cell, thereby reducing the concentration of local anaesthetic required to produce conduction failure or trapping the highly ionised bupivacaine molecule into the neuronal cell.13,26 Both these events would produce an extended action of local anaesthetics.

Perioperative haemodynamics:

Table 6,7,8 shows perioperative hemodynamic parameters data. In our study there was no significant difference in the hemodynamics like pulse, systolic and diastolic blood pressure found between both the groups.

Peri operative complications:

Table 9 shows incidence of perioperative complications. In our study no major complications like nausea, vomiting, hypotension, bradycardia noted in both groups perioperatively.

SUMMARY

After taking thorough history and pre-operative assessment and Informed consent, 60 patients (30 patients in each group) who were satisfying the inclusion criteria were enrolled into the study.

Brachial plexus block was performed with supraclavicular approach using USG guidance.

Patients with complete sensory and motor block were included in study.

Patients were divided in to two groups according to the local anesthetic mixture they received in supraclavicular approach of brachial plexus block.

Group S: patients who received 0.5% bupivacaine 23 ml plus 0.9% normal saline 2 ml making a total volume of 25 ml were included in Group S.

Group D: patients who received 0.5% bupivacaine 23 ml plus dexamethasone 8 mg (2 ml) making a total volume of 25 ml were included in Group D .

The age, sex, weight, ASA grade of patients and duration of surgery were comparable among both groups.

Parameters were noted in the form of mean±SD. A 'p' value of <0.05 was considered as statistically significant.

The mean time of onset of sensory block in group S was 4.33 ±0.88 min. and group D was 3.73±0.90 min.

The mean time of onset of motor block in group S was 6.03±0.71 min. and group D was 5.13±0.97 min.

The onset of sensory block and motor block was significantly faster in dexamethasone group compared with saline group. ($p < 0.05$). The mean time to achieve peak sensory block in group S was 11.96±0.80 min and group D was 9.63±0.96 min.

The mean time of achieve peak motor block in group S was 16.13±1.30 min and group D was 12.9±1.12 min.

The mean time to achieve peak sensory block and motor block was significantly faster in dexamethasone group compared with saline group. ($p< 0.05$)

The mean time of duration of motor block in group S was 482.46±34.23 min and in group D was 619.83±32.94 min.

The mean time for 1st rescue analgesia in group S was 609.66±35.52 min and in group D was 1062.83±56.95 min.

The mean time of duration of motor block and mean time of first rescue analgesia was longer in dexamethasone group as compared to saline group which were statistically significant. ($p< 0.05$).

Hemodynamic parameters like pulse rate, blood pressure and SpO2 were stable and comparable in both groups.

No complications and adverse events were noted in either group.

CONCLUSION

In conclusion, adding Dexamethasone (8mg) as an adjuvant to 0.5% bupivacaine in ultrasound guided supraclavicular brachial plexus block results in faster onset of sensory and motor block with the significant prolongation of duration of motor block and post operative analgesia without any side effects.

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