Section: Anesthesia

Original Research Article

COMPARISION OF DEXAMETHASONE AND KETOROLAC AS AN ADJUVANT TO 0.5 % ISOBARIC BUPIVACAINE FOR AXILLARY BRACHIAL PLEXUS BLOCK IN PATIENTS UNDERGOING HAND AND FOREARM SURGERIES

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ABSTRACT

Background: Aim: To study and compare the efficacy of dexamethasone and kerorolac as an adjuvant to 0.5 % isobaric bupivacaine for axillary brachial plexus block in patients undergoing hand and forearm surgeries for post-operative analgesia.

Materials and Methods: The patients were allocated randomly using the closed envelope method into two study groups. **Group D** containing 20 patients receiving 30 ml of 0.5% bupivacaine with dexamethasone (8mg). **Group K** containing 20 patients receiving 30 ml of 0.5% bupivacaine plus 1 mL of ketorolac (30 mg) in 1 mL of 0.9% normal saline. The patients were in the age group of 18 to 60 years of either sex, coming for surgeries, either emergency or planned, hand and forearm surgeries in the orthopedics or plastic surgery department. Sensory and motor blockade were assessed every 5 minutes interval after completion of injection till 30 min. The onset, peak and duration of motor block and sensory block, time to first rescue analgesic, pain scoring by Visual Analogue Scale (VAS), heart rate and blood pressure were recorded till 24 hrs from the time of injection.

Results: In the present study, there was no statistically significant difference in demographic profiles between the two studied groups. The study shows male predominance. There was no significant difference in terms of duration of surgery between the groups (p=0.274). Onset and peak sensory and motor block were similar in both the groups. The sensory block total duration in Group D was 16 - 17 hrs which is significantly higher than Group K with 14 - 15 hrs (p = 0.000***). The motor block total duration in Group D was 8 - 10 hrs which is significantly higher than Group K with 6 - 8 hrs. There was a higher requirement for rescue analgesia in the ketorolac group compared to the dexamethasone group. In Group K all patients received rescue analgesic by 21 hrs. In Group D only four patients received rescue analgesic and only after 21 hrs postoperatively.

Conclusion: The present study concluded that; the use of 8 mg dexamethasone as adjuvant to 30 ml of 0.5% bupivacaineprovides significant postoperative analgesia in patients undergoing hand and forearm surgeries when compared to 30 mg of ketorolac with 30 ml of 0.5%bupivacaine. Sensory and motor block duration was significantly higher in Group D when compared to Group K

Keywords: Dexamethasone, ketorolac, 0.5 % isobaric bupivacaine, Axillary brachial plexus block, forearm surgeries, Visual Analogue Scale (VAS).

INTRODUCTION

The International Association for the Study of Pain (IASP) defined pain as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage".[1] Unfortunately, pain is often underestimated and undertreated. The management of pain during and after surgery is a critical aspect of anesthesia. Effective pain management in the postoperative period can have several benefits. It can improve patient satisfaction, reduce postoperative complications, facilitate faster recovery and rehabilitation, and lower the overall cost of treatment.[1,2]

Peripheral nerve blockade is an important component of comprehensive anesthesia care. Skilled application of peripheral nerve blockade expands the options available to anesthesiologists, enabling them to provide optimal anesthesia care. It can be used alone as sole “surgical” anesthetic, or as a supplement to provide analgesia and muscle relaxation together with general anesthesia, or as the initial step in providing prolonged postoperative analgesia, as with brachial plexus blocks or continuous peripheral nerve catheters. Compared to parenteral analgesics, single injection orcontinuous peripheral nerve blockade can provide superior analgesia and reduce the incidence of side effects of opioids in the postoperative setting.[3]

Brachial plexus block is a commonly used regional nerve block technique for anesthesia and analgesia during upper extremity surgery. This approach avoids the potential side effects of general anesthesia and the stress associated with laryngoscopy and tracheal intubation.

The axillary approach is relatively simple to perform, and may be associated with a relatively lower risk of complications as compared with interscalene (e.g., spinal cord or vertebral artery puncture) or supraclavicular brachial plexus block (e.g., pneumothorax).[5]

Ultrasound-guided axillary brachial plexus block (ABPB) has revolutionized regional anesthesia practice by providing precise visualization of anatomical structures, accurate needle placement, and real-time monitoring of local anesthetic spread. This technique offers several advantages over traditional blind approaches, including increased safety, efficacy, and patient satisfaction. The use of ultrasound guidance allows to identify the axillary artery, enables precise localization of the brachial plexus divisions (i.e., radial, ulnar, median, and musculocutaneous nerves), facilitating targeted deposition of local anesthetic for optimal nerve blockade.

It enables real-time assessment of local anesthetic spread within the neural sheath, ensuring adequate coverage of all relevant nerve branches. By visualizing the distribution of local anesthetic around the targeted nerves, anesthesia providers can adjust injection volumes and techniques to optimize block success while minimizing systemic absorption and toxicity risk.

Therefore, ultrasound guidance plays a pivotal role in optimizing the efficacy, safety, and patient outcomes of ABPB for hand and forearm surgeries. Its ability to provide accurate anatomical visualization, precise needle guidance, and real-time monitoring of local anesthetic spread makes it an indispensable tool in modern regional anesthesia practice.

The incorporation of adjuvants into ultrasound-guided ABPB further enhances its efficacy and duration of action, providing prolonged postoperative analgesia and reducing opioid requirements.

Among the various adjuvants such as adrenaline, clonidine, dexamethasone, buprenorphine, MgSO4, ketorolac have been investigated for their potential synergistic effects with local anesthetics in ABPB, dexamethasone and ketorolac have garnered significant interest.

Dexamethasone, a potent corticosteroid, exerts anti-inflammatory and immunosuppressive effects by inhibiting the release of inflammatory mediators and stabilizing cell membranes. It may prolong block duration by increasing the activity of inhibitory potassium channels on nociceptive C fibers6.

Dexamethasone causes vasoconstriction via glucocorticoid receptor mediated nuclear transcription modulation and suppresses inflammatory mediators and Prostaglandins (PGE2).[7] Its use as an adjuvant in regional anesthesia has been associated with prolonged duration of sensory and motor blockade and reduced postoperative pain scores in various surgical procedures.

Ketorolac, a nonsteroidal anti-inflammatory drug (NSAID), inhibits the production of prostaglandins by blocking the activity of cyclooxygenase enzymes, resulting in analgesic, anti-inflammatory, and antipyretic effects.

The integration of ultrasound guidance with adjuvant therapy represents a cornerstone in the evolution of regional anesthesia techniques, offering patients the benefits of enhanced pain relief, reduced opioid consumption, and accelerated recovery following hand and forearm surgeries.

Despite the individual efficacy of dexamethasone and ketorolac as adjuvants in regional anesthesia, there remains a paucity of literature comparing their effectiveness in ultrasound-guided ABPB for hand and forearm surgeries. Such a comparative analysis is crucial for informing clinical practice and optimizing patient outcomes by identifying the superior adjuvant in terms of efficacy, safety, and patient satisfaction.

The primary objective of this study is to compare the effectiveness of dexamethasone and ketorolac as adjuvants to 0.5% bupivacaine in ultrasound-guided ABPB for hand and forearm surgeries.

Specifically, this study aims to evaluate the following parameters

1. Onset and duration of sensory and motor blockade
2. Postoperative pain scores and time to rescue analgesia
3. Patient satisfaction with postoperative pain management
4. By systematically assessing these outcomes, this study seeks to provide valuable insights into the optimal adjuvant choice for enhancing the efficacy of ABPB in hand and forearm surgeries.

Aims and Objectives

Aim

To study and compare the efficacy of dexamethasone and kerorolac as an adjuvant to 0.5 % isobaric bupivacaine for axillary brachial plexus block in patients undergoing hand and forearm surgeries for post-operative analgesia.

Objectives

Primary Objective

To assess the efficacy of dexamethasone and ketorolac as adjuvants to 0.5% bupivacaine in axillary brachial plexus block by measuring postoperative pain scores (visual analogue scores).

Secondary Objective

1. To determine which study group has a higher requirement for rescue analgesics.
2. To study the effect of these adjuvants on sensory and motor block characteristics using hollmen scale for sensory block and modified bromage scale for motor block.

MATERIALS AND METHODS

Study Design: This is a comparative study conducted on patients undergoing hand and forearm surgeries, after approval from the ethical committee of AIMSR, jubilee hills, Hyderabad.

Sample Size: Population of 40

Study Duration: Conducted over a period of 18 months following approval by the college ethical committee of AIMSR, Hyderabad.

Inclusion Criteria

- ASA I, II and lII
- Patients aged between 18 to 60 yrs
- Patients who are willing to participate in the study.

Exclusion Criteria

- ASA IV and pregnancy
- Patients with neuropathies
- Patients with blood coagulation pathology
- Allergic to amide local anaesthetic agents or adjuvants
- Active infection at the site of injection
- Patients with respiratory compromise
- Patients who are not willing to participate in the study.

Methodology

- During preanesthetic visit, the patients have been explained about the study purpose, advantages, and risks of the procedure, and informed written consent was obtained.
- Patients were educated preoperatively on the day before the surgery about the use of visual analog scale (VAS) score for pain assessment (VAS; 0=no pain and 10=worstpain imaginable).
- On the day of surgery, a premedication of 0.02mg/kg body weight of midazolam was administered intravenously 15 minutes before the procedure.
- All the necessary equipment and emergency drugs were kept ready for resuscitation inorder to manage the toxic and untoward reactions occurring during the procedure.
- The patients were brought to the operation theatre and advised to lie in supine position with due comfort on the tiltable (operating) table.
- Standard monitoring including non invasive blood pressure, continuous ECG, pulseoximetry were recorded.
- Under sterile precautions cleaning and draping of the axilla was done.
- The block was performed using a portable ultrasound system with the patientarm abducted from the body (90°) and flexed in the elbow joint (90°).
- The probe of the ultrasound machine was placed over the axillary region and axillary sheath was identified.
- The skin was anesthetized with 2 mL of2% lignocaine prior to introducing the block needle.
- A 22 G blunt tipped echogenic needle was used to approach it in order to inject the LA solution.
- Patients in Group D (n=20) received 30 mL (wt> 50kg) of 0.5% bupivacaine plus 2 mL of dexamethasone (8mg) and Group K (n=20) received 30 mL of 0.5%bupivacaine plus1mL of ketorolac (30 mg) in 1 mL of 0.9% normal saline.
- The radial, median, and ulnarnerves were identified and blocked independently after visualizing pulsatile axillary artery using ultrasonography.
- Since the musculocutaneous nerve is situated either inside the coracobrachialis or between the biceps and the muscle, it is blocked separately.
- Inadvertent intravascular injection was avoided by aspirating frequently and visualizing on the ultrasound machine. Inadvertent intraneural injections were also avoided by stopping the injection when the patient complained of pain during injection.
- Sensory and motor blockade were assessed every 5 minutes interval after completion of injection till 30 min.
- The onset, peak and duration of motor block and sensory block, time to first rescue analgesic, pain scoring by Visual Analogue Scale (VAS), heart rate and blood pressure were recorded till 24 hrs from the time of injection.

- The sensory block will be evaluated by Hollmen scale and motor block by using a modified bromage scale for the upper extremity.

Table 3: Hollmen scale for sensory block

1	normal sensation of pinprick
2	pinprick felt as sharp pointed but weaker compared with same area in the other limb
3	pin prick recognized as touch with blunt object
4	no perception of pinprick.

Table 4: Modified bromage scale for the upper extremity for motor block

0	Normal motor function with full flexion and extension of elbow, wrist, and fingers
1	decreased motor strength with ability to move the fingers only
2	complete motor block with inability to move the fingers
3	unable to move the arm, elbow or fingers .

- Onset of sensory block was recorded as the interval between the time of injection and the development of loss of sensation to pin prick (hollman2)
- Duration of the sensory block was taken as the time interval between the end of drug injection and the complete resolution of pin prick sensation on all nerve segments.
- Onset of Bromage scale 1 was considered the onset of motor block.
- Duration of motor block was taken from the time of injection to return of Bromage score of 0.
- Duration of analgesia was recorded with the help of Visual Analog Scale (VAS) which ranges from 0 to 10. This scale was noted per every 3rd hour post-operatively till 24hrs .
- Rescue analgesia was administered when VAS score came to 5 and time of first rescue analgesic was noted.

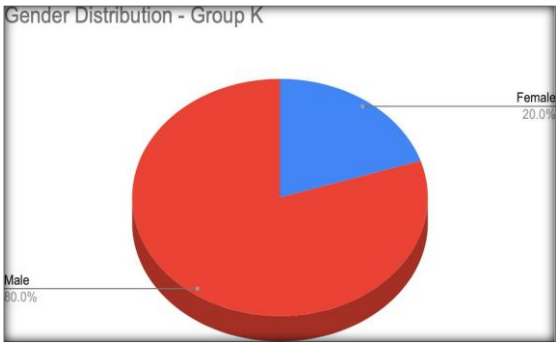
Statistical Analysis

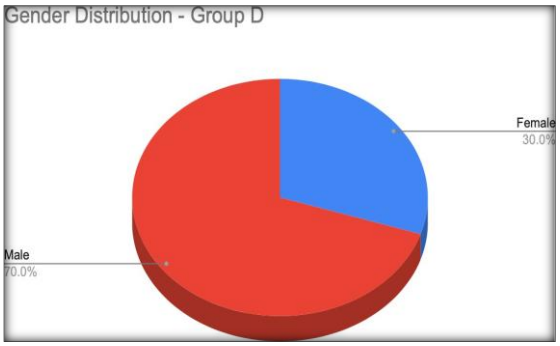
All the data were recorded in a Microsoft excel sheet and then transferred to SPSS-24 Software (statistical package for social sciences) for analysis. Chi-square analysis was used to compare the qualitative variables. For the analysis of quantitative variables the student t-test was used. Intergroup comparison of VAS over time was measured using repetitive measures ANOVA test. A p-value<0.05 was considered as statistically significant and a p<0.001 as highly significant.

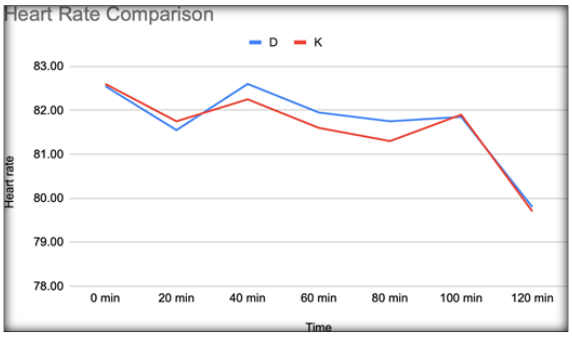
RESULTS

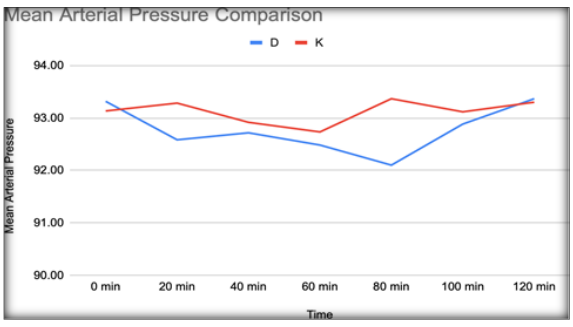
A comparative study of 0.5% bupivacaine with dexamethasone and ketorolac as adjuvants in ABPB was carried out on 40 patients randomized into two groups of 20 patients each in the age group of 18 to 60 years. The following observations were made.

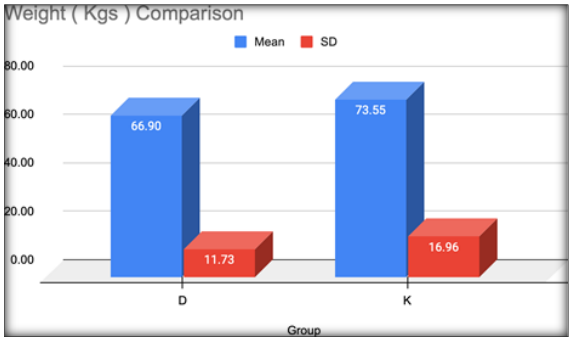
Patients in Group D (n=20) received 30 mL (wt> 50kg) of 0.5% bupivacaine plus 2 mL of dexamethasone (8 mg) and Group K (n=20) received 30 mL of 0.5% bupivacaine plus 1 mL of ketorolac (30 mg) in 1 mL of 0.9% normal saline.

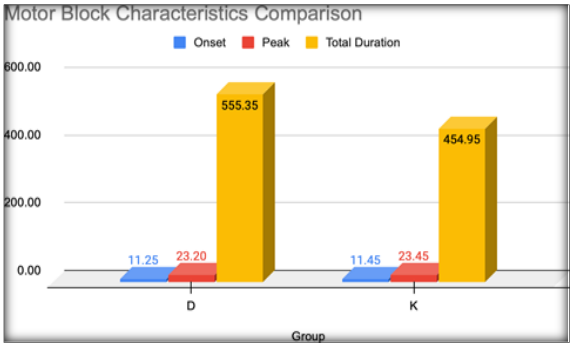


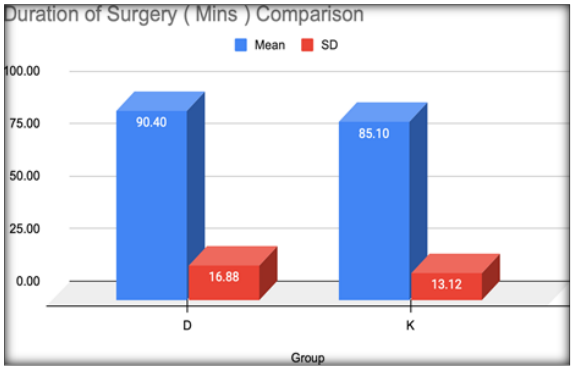


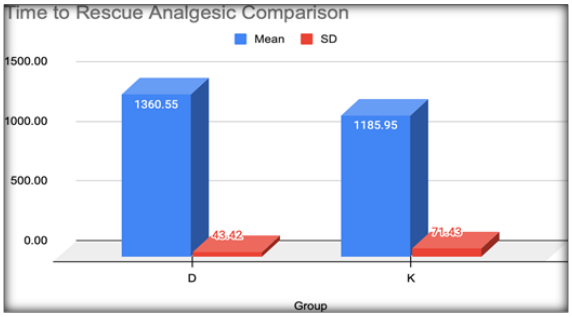


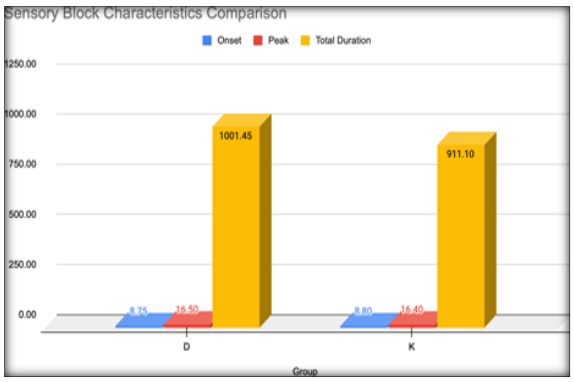


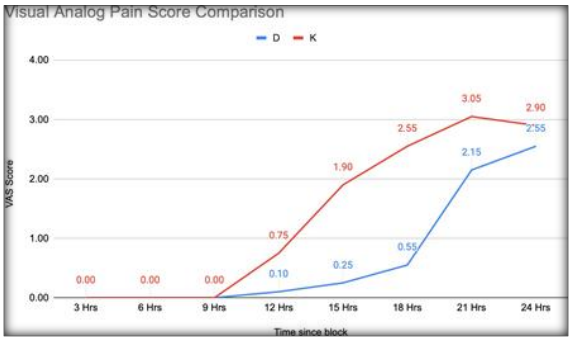












In Group K all patients received rescue analgesic by 21 hours. In Group D only four patients received rescue analgesic and only after 21 hours post-operatively.

Table 1: Age Distribution

AGE		
Group	**Mean**	**SD**
D	35.55	10.21
K	31.70	9.49

Mean comparison of age between the groups

Table 2: Gender Distribution

GENDER DISTRIBUTION			
Group	**Female**	**Male**	**Total**
D	6	14	20
K	4	16	20

On comparing the gender, there was no significant difference between the groups but there was male preponderance in the present study

Table 3: Heartrate

HeartRate							
Group	**0min**	**20min**	**40min**	**60min**	**80min**	**100 min**	**120 min**
D	82.55	81.55	82.60	81.95	81.75	81.85	79.8
K	82.60	81.75	82.25	81.60	81.30	81.90	79.7

Mean Heart Rate comparison between the groups

Table 4: Mean Arterial Pressure

Mean Arterial Pressure							
Group	**0 min**	**20 min**	**40 min**	**60 min**	**80 min**	**100 min**	**120 min**
D	93.32	92.58	92.72	92.48	92.10	92.88	93.37
K	93.13	93.28	92.92	92.73	93.37	93.12	93.30

Mean Arterial Pressure comparison between the groups

Table 5: Weight Distribution

WEIGHT (Kgs)		
Group	**Mean**	**SD**
D	66.90	11.73
K	73.55	16.96

Mean weight comparison between the groups. The mean body weight in Group D was 66.90 ± 11.73, in Group K was 73.55 ± 16.96. There was no significant difference in the weight distribution between the groups (p=0.158).

Table 6. Duration of Surgery

DURATION OF SURGERY (Mins)		
Group	**Mean**	**SD**
D	90.40	16.88
K	85.10	13.12

Mean Duration of Surgery comparison between the groups. The mean duration of surgery in Group D was 90.40 ± 16.88, in Group K was 85.10 ± 13.12. There was no significant difference in the duration of surgery between the groups (p=0.274).

Table 7: Sensory Block Characteristics

SENSORY BLOCK CHARACTERISTICS			
Group	**Onset**	**Peak**	**Total Duration**
D	8.75 ± 0.91	16.5 ± 1.43	1001.45 ± 49.72
K	8.8 ± 1.06	16.4 ± 1.27	911.10 ± 55.84

Mean Sensory Block Characteristics comparison between the groups. There was no significant difference in the sensory block onset (p=0.873) and sensory block peak (p= 0.816) between the groups. However sensory block total duration in Group D was 1001.45 ± 49.72 which is significantly longer than Group K of 911.10 ± 55.84 (p = 0.000***).

Table 8: Motor Block Characteristics

MOTOR BLOCK CHARACTERISTICS			
Group	**Onset**	**Peak**	**Total Duration**
D	11.25 ± 1.02	23.20 ± 1.06	555.35 ± 81.81
K	11.45 ± 1.39	23.45 ± 2.14	454.95 ± 69.77

Mean Motor Block Characteristics comparison between the groups. There was no significant difference in the motor block onset (p=0.607) and motor block peak (p=0.643) between the groups. But the motor block total duration in Group D was 555.35 ± 81.81 which is significantly higher than Group K of 454.95 ± 69.77 (p = 0.0002).

Table 9: Time to Rescue Analgesic

TIME TO RESCUE ANALGESIC		
Group	**Mean**	**SD**
D	1360.55	43.42
K	1185.95	71.43

Mean Time to rescue analgesic comparison between the groups. The time to rescue analgesic in Group D was 1360.55 ± 43.42, in Group K was 1185.95 ± 71.43. There is significant difference observed in the time to rescue analgesic between the groups (p=0.000***).

Table 10: Visual Analog Pain Score

Visual Analog Pain Score								
Group	**3 Hrs**	**6 Hrs**	**9 Hrs**	**12 Hrs**	**15 Hrs**	**18 Hrs**	**21 Hrs**	**24 Hrs**
D	0.00	0.00	0.00	0.10	0.25	0.55	2.15	2.55
K	0.00	0.00	0.00	0.75	1.90	2.55	3.05	2.9

DISCUSSION

Dexamethasone, a synthetic glucocorticoid known for its potent anti-inflammatory properties, has gained attention as an adjunct analgesic in conjunction with perineural blockade, as well as other regional and general anesthesia techniques 45. Numerous randomized controlled trials (RCTs) have investigated the effects of both perineural and intravenous dexamethasone as adjuncts to peripheral nerve blocks. These studies have consistently

demonstrated that both perineural and intravenous administration of dexamethasone prolong sensory blockade and the duration of post-operative analgesia when compared to placebo.[1,2]

Ketorolac, a perineural NSAID, exerts its analgesic effects by inhibiting prostaglandin synthesis. Studies have shown that ketorolac alone provides sufficient pain relief when administered parenterally or via wound infiltration.[3] There are limited clinical studies demonstrating the efficacy of ketorolac in prolonging the duration of analgesia when used as an adjuvant with local anesthetics in perineural blockade and intravenous regional anesthesia (IVRA) 49. Ketorolac may be preferred due to its opioid-sparing effects. In standard IV doses, ketorolac produces analgesia equivalent to 6-12 mg of morphine for a duration ranging between 6-8 hours.

Our study explores the efficacy of dexamethasone versus ketorolac as adjunct to local anesthetic in ultrasound-guided axillary brachial plexus block. While dexamethasone has been extensively investigated, with documented advantages such as prolonged block duration and mitigation of local anesthetic-induced nerve toxicity and perineural inflammatory responses, studies on the use of ketorolac in this context are comparatively limited.[4,5]

Concerns regarding neurotoxicity associated with adjunct usage have been addressed, particularly in relation to dexamethasone, as reported by Eisenach JC et al., which has demonstrated a protective effect against local anesthetic-induced nerve toxicity. Studies conducted by Cinar O et al.,6 have suggested neuroprotective properties for ketorolac, with evidence of promoting nerve regeneration and functional recovery in animal models. Human studies investigating the neurotoxic effects of ketorolac, particularly intrathecal administration, have yielded reassuring results.[7]

In conditions like ongoing infections, compromised immune states, and diabetes, where steroid usage is contraindicated, NSAIDs emerge as a viable option. Thus, we opted to compare the efficacy of a steroid with an NSAID.

Our results demonstrate that dexamethasone significantly extended the duration of sensory and motor blocks, providing significantly prolonged duration of post-operative analgesia in Group D (1360.55 ± 43.42) when compared to Group K (1185.95 ± 71.43). The mechanism by which dexamethasone prolongs block duration is believed to involve anti-inflammatory effects and modulation of potassium channels on nociceptive C-fibers, reducing neuronal excitability for an extended time frame.

This is consistent with previous studies, Parrington et al. (2010),[8] which showed that adding dexamethasone to mepivacaine significantly prolongs the duration of analgesia after an interscalene brachial plexus block.

A systematic review and meta-analysis conducted by Albrecht et al. in 2015 affirmed that perineural administration of dexamethasone with long or intermediate acting local anesthetics resulted in prolonged analgesia duration. Additionally, patients experienced reduced pain intensity at rest and during movement within the initial 24-hour postoperative period.[9]

Similarly, Choi's 2014 meta-analysis of randomized trials demonstrated that dexamethasone as an adjuvant in brachial plexus block extended analgesic duration for long-acting local anesthetics.[10]

Cummings et al. also provided evidence supporting the significant prolongation of analgesia duration with perineural dexamethasone adjunct to IBPB using ropivacaine or bupivacaine.[11]

Kumar et al. compared the efficacy of ropivacaine alone versus ropivacaine with dexamethasone in brachial plexus block. They concluded that adding 8 mg of dexamethasone to ropivacaine in the supraclavicular approach significantly prolonged motor blockade and post-operative analgesia compared to ropivacaine alone.[11]

Mirkheshti et al. conducted a study comparing the effects of Dexmedetomidine versus ketorolac as adjuvants to local anesthetics in infraclavicular brachial plexus block. They found that the ketorolac group exhibited a significantly longer time to first rescue analgesia compared to dexmedetomidine, with dexmedetomidine demonstrating superior effects on sensory and motor block duration as well as motor block onset.[4]

Elyazed et al. investigated nitroglycerine and ketorolac as adjuvants to lidocaine for intravenous regional anesthesia (IVRA) in patients undergoing forearm and hand surgeries. They found that both agents improved preoperative analgesia quality, with ketorolac being superior in delaying the onset of tourniquet pain and extending postoperative analgesia duration.[13]

Basenko et al., who concluded that adding 30 mg ketorolac to 40 ml bupivacaine 0.25% for brachial plexus block prolonged the duration of postoperative analgesia with no significant modification of hemodynamic parameters.[14]

In the above mentioned studies, ketorolac consistently prolonged the time to first rescue analgesia when administered perineurally or via IVRA with local anesthetics. In our current study, ketorolac effectively provided analgesia when administered perineurally alongside local anesthetics.

In 2019, Prasanna Kumar et al,[12] conducted a study comparing the efficacy of dexamethasone versus ketorolac with ropivacaine for nerve stimulator-guided infraclavicular brachial plexus block. Their findings indicated that in Group D, the mean duration of sensory and motor block was significantly prolonged compared to Group K, with durations of 10.5 versus 9.3 hours for sensory block and 8.5 versus 6.40 hours for motor block, respectively.[13]

The mean time to first rescue analgesia was

significantly extended in Group D compared to Group K, with durations of 17.40 hours and 12.40 hours, respectively. These observations were similar to the results of our study with respect to ketorolac.

Clinical Implications

The choice between dexamethasone and ketorolac as an adjuvant should consider individual patient profiles and surgical contexts. Dexamethasone's prolonged analgesic effect and faster onset make it an excellent choice for surgeries requiring extended pain relief particularly in outpatient settings where prolonged analgesia can enhance patient comfort and reduce additional pain management interventions. Ketorolac, while offering effective pain relief, might be preferable in patients where steroid-related side effects need to be avoided, such as those with diabetes or conditions where immunosuppression is a concern. Its NSAID properties provide a good balance of analgesia andanti-inflammatory effects without the prolonged systemic effects associated with corticosteroids.

Limitations

1. Patients were monitored upto 24 hrs in the postoperative phase.
2. Perioperative blood glucose concentration was not evaluated.
3. A control group with no adjuvant added to bupivacaine was not part of our study design.

CONCLUSION

The present study concluded that; the use of 8 mg dexamethasone as adjuvant to 30 ml of 0.5% bupivacaineprovides significant postoperative analgesia in patients undergoing hand and forearm surgeries when compared to 30 mg of ketorolac with 30 ml of 0.5%bupivacaine. Sensory and motor block duration was significantly higher in Group D when compared to Group K

Conflict of Interest: None

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REFERENCES

1. Zorilla-Vaca A, Li J. Dexamethasone injected perineurally is more effective than administered intravenously for peripheral nerve blocks. Clin J Pain 2017; 65:1-7.
2. Kim JH, Lee YS, Shin HW, et al. Effect of administration of ketorolac and local anaesthetic infiltration for pain relief after laparoscopic assisted vaginal hysterectomy. J Int Med Res 2005; 33:372-378.
3. El-Hamid AM, Othman MSK. The effect of addition of local or intravenous ketorolac and morphine as an adjuvant to local anaesthetic in popliteal nerve block: A comparative study with epidural anaesthesia. Ain Shams J Anaesthesiol 2011; 4:40-56.
4. Mirkheshti A, Saadatniaki A, Salimi A, Manafi Rasi A, Memary E, Yahyaei H. Effects of Dexmedetomidine Versus Ketorolac as Local Anesthetic Adjuvants on the Onset and Duration of Infraclavicular Brachial Plexus Block. Anesthesiology and Pain Medicine [Internet]. 2014 Aug 2 [cited 2020 Nov 15];4(3).
5. Basenko IL, Tchuev PN, Budnyuk AA, Qureshi F a. K, Marukhnyak LI. Use of Ketorolac as adjuvant in brachial plexus block with bupivacaine: A-472. European Journal of Anaesthesiology | EJA [Internet]. 2006 Jun 1 [cited 2024 May20];23:123.
6. Cinar O, Elvan Ölçmen, Orhan Kalemci, Hüsnü Alper Bağriyanik, Alper Doğan, Burak Kucukebe, et al. Ketorolac Tromethamine Promotes Functional Recovery and Enhances Nerve Regeneration After Sciatic Nerve Trauma in Rats. Journal of Neurological Sciences-turkish. 2012 Jan 1;29(1):65–75.
7. Eisenach JC, Curry R, Hood DD, Yaksh TL. Phase I safety assessment of intrathecal ketorolac. Pain. 2002 Oct;99(3):599–604.
8. ParringtonSJ,O'DonnellD,ChanVWS,Brown-ShrevesD,Subramanyam R, QuM,et al. Dexamethasone Added to Mepivacaine Prolongs the Duration of Analgesia After Supraclavicular BrachialPlexusBlockade.Regional Anesthesia and Pain Medicine.2010 Sep;35(5):422–6.
9. Albrecht E, Kern C, Kirkham KR. A systematic review and meta-analysis of perineural dexamethasone for peripheral nerve blocks. Anaesthesia. 2014 Aug 14;70(1):71–83.
10. Choi S, Rodseth R, McCartney CJL. Effects of dexamethasone as a local anaesthetic adjuvant for brachial plexus block: asystematic review and meta-analysis of randomized trials. British Journal of Anaesthesia. 2014 Mar;112(3):427–39.
11. Cummings KCIII, Napierkowski DE, Parra SanchezI,KurzA, DaltonJE,BremsJJ,etal. Effect of dexamethasone on the duration of interscalene nerve blocks with ropivacaine or bupivacaine. BJA: British Journal of Anaesthesia [Internet]. 2011 Sep 1 [cited 2021 Jun 5];107(3):446–53.
12. Kumar S, PalariaU, SinhaAK, etal.Comparative evaluation of ropivacaine and ropivacaine with dexamethasone in supraclavicular brachial plexus block for postoperative analgesia. Anesth Essays Res 2014; 8:202-208
13. Elyazed MMA, Ghaffar MSA. Nitro-glycerine and ketorolac as an adjuvant to lidocaine for intravenous regional anaesthesia in patients undergoing forearmandh and surgery. AAMJ 2014; 12:159-176.
14. Basenko IL, Tchuev PN, Budnyuk AA, Qureshi F a. K, Marukhnyak LI. Use of Ketorolac as adjuvant in brachial plexus block with bupivacaine: A-472. European Journal of Anaesthesiology | EJA [Internet]. 2006 Jun 1 [cited 2024 May20]; 23:123.