VOLUME - 10, ISSUE - 12, DECEMBER - 2021 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Anaesthesiology

OBSERVATIONAL STUDY OF INTRAMUSCULAR DEXMEDETOMIDINE AS AN ADJUVANT TO BUPIVACAINE IN USG GUIDED SUPRACLAVICULAR BLOCK FOR UPPER LIMB SURGERIES

Dr. Bharti Choudhary MD Anaesthesia, Civil Hospital Nadaun, Hamirpur, Himachal Pradesh.

Dr. Nishchint Sharma* MD Anaesthesia. Civil Hospital Nadaun, Hamirpur, Himachal Pradesh. *Corresponding Author

ABSTRACT

BACKGROUND: The supraclavicular level is an ideal site to achieve anaesthesia of the entire upper extremity just distal to the shoulder. Dexmedetomidine has become one of the frequently used drugs in anaesthesia due to its sedative, analgesic and anaesthetic sparing effect. Dexmedetomidine is used by different routes, we have used dexmedetomidine intramuscular as an alternative to intravenous because intramuscular route will mimic the pharmacokinetics and pharmacodynamics of perineural brachial plexus block. **MATERIAL AND METHODS:** 30 patients undergoing upper limb surgeries after taking consent for study selected. 20 ml of 0.5% Bupivacaine perineurally and 1 μg/kg Dexmedetomidine intramuscular in 1 ml normal saline on contralateral shoulder given. The primary outcome measure in this study was the time to first analgesic request. The secondary outcome measures include sedation scores, onset and duration of sensory and motor blockade in three nerves distribution. **RESULTS:** Pain free interval is 923 [842.25, 1033.2] minutes.(Median) **CONCLUSION:** Intramuscular dexmedetomidine as adjuvant to 0.5% bupivacaine in supraclavicular block results in, quick onset of sensory and motor block, prolonged sensory and motor block duration, prolonged pain free interval without any major side effect along with arousable sedation.

KEYWORDS :

INTRODUCTION:

- The supraclavicular level is an ideal site to achieve anaesthesia of the entire upper extremity just distal to the shoulder as the plexus remains relatively tightly packed at this level, resulting in a rapid and high-quality block.
- Dexmedetomidine has become one of the frequently used drugs in anaesthesia due to its sedative, anxiolytic, analgesic, neuroprotective and anaesthetic sparing effect.
- Systemic administration of dexmedetomidine prolongs the duration of brachial plexus block. *Rutkowska K, et al. The effect of dexmedetomidine sedation on brachial plexus block in patients with end-stage renal disease. Eur J Anaesthesiol. 2009;26:851–5.*
- There is no definite proof in literature, regarding its site of action and mechanism of action on peripheral nerve block.
- We have used dexmedetomidine intramuscular as an alternative to intravenous because intramuscular route will mimic the pharmacokinetics and pharmacodynamics of perineural brachial plexus block.
- IM route is a new route for dexmedetomidine, which preserve background EEG activity to provide safe and effective sedation. *Keira P. Mason, et al. Intramuscular Dexmedetomidine Sedation for Pediatric MRI and CT. AJR Am J Roentgenol.2011;197:720-5.*

MATERIAL AND METHODS:

Place of study

Dr. Rajendra Prasad Government Medical college, Kangra at Tanda, H.P.

Inclusion Criteria

1. Males and females between the age group 18-65 years.
2. ASA class I-II.
3. BMI 18.5-29.9.
4. Undergoing surgeries around mid-arm, elbow, forearm and hand.

Exclusion Criteria

1. Patient's refusal for block.
2. History of cardiac, renal or hepatic disease, CNS disorders, neuropathy.
3. Patients having bleeding disorders.
4. Hypersensitivity to local anesthetics.
5. Local infection at the site where needle for block is to be inserted.
6. Patients noted to have dysrhythmias on the electrocard iogram (ECG)
7. Allergic to study drugs.
8. Patients in whom the block effect will be partial and will require supplementary anesthesia.

METHOD

- 20 ml of 0.5% Bupivacaine perineurally and 1 μg/kg Dexmedetomidine intramuscular in 1 ml normal saline on contralateral shoulder.

Outcome measures

- The primary outcome measure in this study was the time to first analgesic request.
- The secondary outcome measures include sedation scores, onset and duration of sensory and motor blockade.

Table No. 1- Demographic characteristics

Demographic characteristics	(n=30)
Age (Years)	35.93±12.62
Sex (Male:Female)	22:8
BMI (Kg/m2)	22.89±2.12
ASA Grade (1:2)	14:16
Duration of surgery (minutes)	101.3±37.95

Table No. 2- Block characteristics

Block characteristics	Median Time (Minutes)
Onset of Sensory (Mins)	
Radial	9.0 [6.0, 11.5]
Ulnar	8.5 [6.0, 10.25]
Median	8.5 [6.0, 11.25]
Onset of Motor (Mins)	
Radial	10.0 [7.0, 12.5]
Ulnar	9.5 [7.0, 11.25]
Median	9.5 [7.0, 12.25]
Duration of Sensory(Mins)	
Radial	762.5 [675.0, 866.25]
Ulnar	745.0 [661.25, 852.5]
Median	757.5 [675.0, 872.5]

Duration of Motor (Mins)	
Radial	722.5 [637.5, 801.25]
Ulnar	727.5 [642.5, 806.25]
Median	717.5 [632.5, 796.25]
Pain free interval (Mins)	923 [842.25, 1033.2]

Table No. 3-Pain free interval (VAS)

Pain free interval	No. of Patients
<10 hour	0
10-12 hour	1
12.1 -14 hour	6
>14 hour	23

Table No. 4-Sedation score (modified Ramsay sedation Score.)

Time interval	Sedation score
30 Minutes	2.77±0.86
1 hr	2.83±0.83
4 hr	2.97±0.76
8 hr	3.07±0.91
12 hr	2±0
18 hr	2±0
24 hr	2±0

DISCUSSION:

- The central effects of dexmedetomidine seems to play some role in prolongation of sensory and motor block duration, as 50 g of dexmedetomidine intravenous infusion significantly prolonged brachial plexus block duration when compared to control group. *Kathuria S, et al. Dexmedetomidine as an adjuvant to ropivacaine in supraclavicular brachial plexus block. Saudi J **Anaesth**. 2015;9:148-54.*
- Duration of analgesia in 20 ml, 0.5% bupivacaine in supraclavicular block was 738.5 ± 7.01 mins. *Ramachandra R. Avula et al. 2019.*

CONCLUSION:

- Intramuscular dexmedetomidine as adjuvant to 0.5% bupivacaine in supraclavicular block results in, quick onset of sensory and motor block, satisfactory long sensory and motor block duration, prolonged pain free interval without any major side effect.
- In addition to favorable block characteristics, there was arousable sedation , which may favor the choice of dexmedetomidine as a sedative agent for surgeries performed under regional anaesthesia.