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Original Research Article

To Compare the Effects in Terms of Onset& Duration of Sensory & Motor Blockade Combination of Dexmedetomidine & Ropivacaine With Ropivacaine Alone for Supraclavicular Brachial Plexus Block

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Abstract:
Background &Method: The aim of this study is tocompare the effects in terms of Onset&duration of sensory & motor blockade combination of Dexmedetomidine&Ropivacaine with Ropivacaine alone for Supraclavicular brachial plexus block. Supraclavicular brachial plexus block a pilot study was conducted as an elective procedure on the patients undergoing upper limb surgery. Thirty cases in each group were recruited for the study&randomized to receive Ropivacaine 0.75% alone or Ropivacaine 0.75% with Dexmedetomidine to arrive at the actual mean differences,&the outcome parameters were studied with the visual analogue scale (VAS), Modified Bromage score&mean time for first analgesic.

Result: Comparing the pulse rate pattern of both groups show statistical significance from 15 min to 10 hour of the study period although they are within an acceptable clinical range.

Conclusion: The randomized comparative clinical study of Brachial plexus block with local anaesthetics Ropivacaine hydrochloride (0.75%), with & with out Dexmedetomidine has revealed that postoperative analgesia has been found to be significantly prolonged in the Dexmedetomidine group&can be used safely.

Keywords: Onset, sensory, motor blockade,dexmedetomidine,ropivacaine.

Study Designed: Observational Study.

1. INTRODUCTION

The use of peripheral nerve blocks is expanding; they are being utilized as the essential&sole sedative procedure to work with effortless medical procedure, enhanced checked sedation care (moderate sedation) or with a "light" general sedative with a laryngeal veil aviation route (LMA), or initiated preoperatively yet principally for postoperative analgesia(1).
Patient fulfillment is improved; there is less mental hindrance with provincial sedation contrasted with general sedation (especially in older patient),&there is news that fringe nerve blocks (territorial sedation) are less immunosuppressive then, at that point, general anaesthesia(2).

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Brachial plexus blocks are territorial sedation strategies that are in some cases utilized as a choice to general sedation for medical procedure of the shoulder, arm, lower arm, wrist&hand. These procedures include the infusion of nearby sedative specialists in closeness to the brachial plexus, briefly impeding the sensation&capacity to move the furthest point. The subject can stay conscious during the resulting surgery, or she/he can be quieted or even completely anesthetized if necessary[3].

There are a few procedures for hindering the nerves of the brachial plexus. These procedures are grouped by the level at which the needle or catheter is embedded for infusing the nearby sedative - Interscalene block on the neck, Supraclavicular block quickly over the clavicle, Infraclavicular block beneath the clavicle&Axillary block in the Axilla (Armpit)[4].

The brachial plexus is generally conservative at the level of the trunks shaped by the C5-T1 nerve roots, so nerve block at this level has the best probability of impeding each of the parts of the brachial plexus[5]. This outcomes in quick beginning times&eventually high achievement rates for a medical procedure&absense of pain of the furthest point, barring the shoulder.

Giving a fast beginning of thick sedation of the arm with a solitary infusion, the Supraclavicular block is great for tasks including the arm&lower arm, from the lower humerus down to the hand.

2. MATERIAL & METHOD

A minimum of 120 patients admitted to Datia Medical College, Datia, M.P. from Jan 2022 to June 2022 satisfying the inclusion&exclusion criteria&undergoing elective upper limb surgery lasting more than 90 minute, after obtaining the ethical committee clearance were included in the study.

Supraclavicular brachial plexus block a pilot study was conducted as an elective procedure on the patients undergoing upper limb surgery. Thirty cases in each group were recruited for the study&randomized to receive Ropivacaine 0.75% alone or Ropivacaine 0.75% with Dexmedetomidine to arrive at the actual mean differences,&the outcome parameters were studied with the visual analogue scale (VAS), Modified Bromage score&mean time for first analgesic. Subsequently using this data the actual numbers to achieve the requisite precision had arrived over&above the current sample size.

Inclusion criteria:

- Age: 18 – 50 years.
- American society of Anaesthesiologists (ASA) physical status I – II.
- Electiveupper limb surgeries.
- Patient height more than 150 cm.
- Weight more than 50 kg.

Exclusion criteria:

- Patient refusal for procedure
- Emergency upper limb surgeries
- Any bleeding disorder or patient on anticoagulants
- Neurological deficits involving brachial plexus
- Patients with allergy to local anaesthetics
- Local infection at the injection site

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- Patients on any sedatives or antipsychotics

3. RESULTS

Table 1: Comparison of Demographic parameters

Demographic parameters **Mean ± SD**	**Group A**	**Group B**	**P value**
Age in years	28.77±14.68	31.4±10.91	0.787
Sex	Male=44 (73.33%)	Male=42 (70.0%)	0.774
	Female=16 (26.66%)	Female=18 (30.0%)	

The above table shows that the average age was 28.77±14.68 yrs in-group A&31.4±10.91 yrs in-group B. Both groups had predominantly male patients, accounting for nearly 2/3 of the total study population in each group. There was no significant difference in age,&sex distribution.

Table No. 2: Comparison of Pulse rate between two groups

Study Period	**Pulse rate beats/min**				**P Value**
	Group A (n=30)		**Group B (n=30)**		
	Mean	**SD**	**Mean**	**SD**	
Pre OP	86.90	17.501	78.60	15.323	0.056
5th minute	90.43	17.182	75.27	17.269	0.001
10th minute	88.70	16.153	73.67	17.903	0.001
15th minute	89.23	16.036	70.53	19.737	0.0001
20th minute	88.67	15.601	69.03	19.261	0.0001
25th minute	87.90	13.885	69.73	17.467	0.0001
30th minute	88.20	15.753	68.20	16.880	0.0001
45th minute	86.40	14.340	68.20	16.198	0.0001
60th minute	83.43	12.156	68.27	16.850	0.0001
75th minute	81.10	12.027	67.30	17.501	0.0001
90th minute	81.37	12.629	67.90	16.898	0.001
105 minute	80.63	11.863	69.20	16.539	0.003
120 minute	81.60	12.436	69.40	16.925	0.002
180 minute	83.03	12.336	70.33	16.221	0.001
240 minute	70.33	16.221	71.83	15.933	0.001
300 minute	85.77	13.513	71.87	15.502	0.000
360 minute	88.83	14.525	72.17	14.872	0.000
420 minute	87.93	15.589	75.43	14.885	0.002
480 minute	84.47	15.402	74.47	16.895	0.020
10 hrs	83.10	13.340	77.37	15.096	0.125
12 hrs	81.83	13.277	80.83	15.254	0.787

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14 hrs	80.80	12.319	79.03	13.875	0.604
16 hrs	78.87	10.941	80.93	14.403	0.534
18 hrs	77.50	11.282	78.70	16.187	0.740
20 hrs	77.23	11.206	76.87	13.781	0.910
22 hrs	77.87	10.686	75.63	14.248	0.495
24 hrs	78.10	10.250	76.17	14.660	0.556
26 hrs	80.17	10.511	77.70	13.596	0.435
28 hrs	81.40	10.865	78.53	13.635	0.372
30 hrs	81.00	10.748	79.00	13.814	0.534

Comparing the pulse rate pattern of both groups show statistical significance from 15 min to 10 hour of the study period although they are within an acceptable clinical range.

Table No. 3: Comparison of Systolic BP between two groups

Study Period	**Sys BP in mm Hg**				**P Value**
	Group A (n=30)		**Group B (n=30)**		
	Mean	**SD**	**Mean**	**SD**	
Baseline	124.90	8.600	124.03	8.540	0.697
5^{th} minute	125.90	8.604	129.20	15.725	0.319
10^{th} minute	124.83	7.571	130.33	11.339	0.032
15^{th} minute	123.10	9.121	133.40	14.970	0.002*
20^{th} minute	121.83	9.143	133.37	14.625	0.001*
25^{th} minute	122.97	9.722	135.97	15.057	0.000*
30^{th} minute	121.47	7.519	135.57	16.149	0.000*
45^{th} minute	120.10	7.170	127.73	9.659	0.000*
60^{th} minute	120.27	5.687	125.90	11.177	0.000*
75^{th} minute	119.70	6.603	123.67	7.649	0.001*
90^{th} minute	120.40	5.969	122.30	10.690	0.001*
105 minute	120.87	5.923	117.67	11.189	0.003*
120 minute	120.70	6.639	114.67	8.632	0.002*
180 minute	122.37	7.513	114.97	9.452	0.001*
240 minute	122.07	7.974	114.47	8.537	0.001*
300 minute	124.37	7.837	115.23	9.576	0.000*
360 minute	125.27	9.727	118.17	8.722	0.000*
420 minute	123.33	5.579	119.33	9.571	0.002*
480 minute	122.40	5.090	120.40	9.804	0.020*
10 hrs	122.03	5.928	120.23	8.211	0.125
12 hrs	121.33	6.794	121.83	7.297	0.787
14 hrs	120.47	6.962	122.50	7.597	0.604
16 hrs	120.07	7.428	125.37	8.185	0.534
18 hrs	118.50	6.766	123.20	8.723	0.740
20 hrs	115.43	20.061	120.53	6.837	0.910
22 hrs	119.73	6.063	120.27	7.543	0.495
24 hrs	120.63	6.651	120.87	6.897	0.556
26 hrs	121.40	6.311	121.40	7.527	0.435
28 hrs	121.33	6.375	122.13	7.682	0.372
30 hrs	121.53	6.224	122.07	6.797	0.534

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4. DISCUSSION

Regional anesthesia empowers site-explicit, enduring,&successful sedation&absense of pain. It is reasonable for the vast majority careful patients&can further develop absense of pain, diminish dreariness, mortality. An all around led territorial sedative strategy is the wonderful sights that gives fulfillment&solace to the patient, anaesthesiologist&specialist the same, so the provincial sedation brings a lot to the table to patient, anesthetist&specialists.

Countless explores have been finished&many medications assessed since antiquated time. Look for long acting neighborhood sedative is perfect&inescapable. Matchless quality of lignocaine stays unchallenged notwithstanding presentation of different nearby sedatives. In any case, it has got brief span of activity&expands hazard of over portion&harmfulness. To delay perioperative absense of pain different assistants, for example, Narcotics, Clonidine, Verapamil, Steroids, Neostigmine&Tramadol have been attempted.

Assortments of receptors intercede nociception in fringe tangible nerve filaments. The information on these receptors has been utilized as different assistants managed alongside neighborhood sedatives. These assistants may draw out the pain relieving term as well as lessen the foundational pain relieving utilization as well as their aftereffects.

Brachial plexus nerve block was first performed by Halsted[(6)]. Hirschel[(7)]&Kulenkampff[(8)] working autonomously infused the bra¬chial plexus percutaneously without the openness of the nerves. Various mod¬ifications of these unique methods, shifting for the most part as per site have been depicted.

Different adjustments of brachi¬al plexus block incorporate interscalene, su¬praclavicular, infraclavicular, axillary,&constant methods. It has been most normally utilized in giving careful an¬esthesia[(9)].

5. CONCLUSION

The randomized comparative clinical study of Brachial plexus block with local anaestheticsRopivacaine hydrochloride (0.75%), with & without Dexmedetomidine has revealed that postoperative analgesia has been found to be significantly prolonged in the Dexmedetomidine group&can be used safely.

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