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Original Research Article

To study the side-effects of dexmedetomidine and fentanyl in various complications

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Abstract:
Background & Method: The aim of this study is to study the side-effects of dexmedetomidine and fentanyl in various complications.

Result: The distribution of study groups according to Age. In study group A mean age was 43.52 ±15.01 years, in group B mean age was 37.51 ±14.21 years and in group C mean age was 32.55 ±15.1 years. The above table shows the distribution of patients according to Side effects. In Group A and B all (100%) patients had no side effects. In Group C, 18 (90.0%) patients had no side effects but 2 (10. %) facing pruritis as side effects.

Conclusion: In group B Dexmedetomidine 100% had sedation score 2. Dexmedetomidine is superior to fentanyl since it facilitates the spread of the block and offers longer post-operative analgesic duration. In group A and B all the subjects had no side effects but in group C only 10 % had minor side effects. It is concluded Dexmedetomidine seems to be a better alternative to fentanyl as an adjuvant as it provides comparable stable hemodynamic, and establishment of sensory anaesthesia and much better sedation levels.

Keywords: dexmedetomidine and fentanyl in various complications.

Study Designed: Observational Study.

1. INTRODUCTION

Dexmedetomidine was approved as the most recent agent in the group of α2-adrenoceptor agonist and was introduced into clinical practice as a short-term sedative (<24 hours). α2-Adrenoceptor agonists have several beneficial actions during the perioperative period[1]. They decrease sympathetic tone, with attenuation of the neuroendocrine and hemodynamic responses to anesthesia and surgery; reduce anesthetic and opioid requirements; and cause sedation and analgesia. They allow psychomotoric function to be preserved while letting the patient rest comfortably. With this combination of effects, α2-adrenoceptor agonists may offer benefits in the prophylaxis and adjuvant treatment of perioperative myocardial ischemia[2].

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Local anesthetics are utilized to give absense of pain and sedation to different careful and nonsurgical methods[3]. These medications are additionally utilized for intense and constant agony the board, to diminish perioperative pressure, to work on perioperative results, and to treat dysrhythmias.

Bupivacaine for further developing absense of pain quality in Brachial plexus block for upper appendage medical procedure directed on 50 ASA1 or 2 patients separated the patients into 2 gatherings: Gathering A - 30ml of 0.5% Bupivacaine, Gathering B - 30ml of 0.5% Bupivacaine + Midazolam 50mcg/kg. Showed that the beginning and length of tactile and engine block was essentially quicker and longer in bunch B contrasted with bunch A ($P<0.001$), Torment score were fundamentally lower in bunch B for 24 hours postoperatively ($P<0.001$). Hemodynamics and sedation scores didn't contrast between the gatherings in the review, which arrived at the resolution that bupivacaine (0.5%) in mix with midazolam (50mcg/kg) sped up the beginning and delayed the term of brachial plexus tactile and engine barricade for upper appendage medical procedure[4]. Interest for salvage absense of pain was additionally essentially lower in bunch B. Contrasted with typical Bupivacaine in a comparative sum, it worked on postoperative absense of pain without creating any bad secondary effects[5].

2. MATERIAL & METHOD

The present study to compare the analgesic efficacy of Dexmedetomidine and Fentanyl as adjuvant to Levobupivacaine and Ligcocaine in PNS guided Supraclavicular Brachial Plexus block" was carried out in Department of Anesthesiology index medical college Hospital and Research centre, Indore M.P. after approval of institutional ethical committee in 60 patients of ASA 1 & ASA II posted for elective upper-limb surgery from Sept. 2020 to Aug. 2021 with Ethical committee approval, A prospective observational and comparative study was planned after applying inclusion & Exclusion criteria, Among 60 patient with each 20 into three group (n+20) American society of anaesthesialogist (ASA) grade 1, 2 patient in the age group 20 to 60 years, posted for elective upper limb orthopedic surgeries under brachial plexus block using supraclavicular approach. Preoperative patient will be visited day before the surgery preoperative evaluation done and will be counselled and familarized with the use of visual analogue scale and the Anaesthetic procedure. All patient will have kept NBM strictly atleast 8 hours before surgeries. An IV access will be achieved on the non-operative arm prior to performing supraclavicular brachial plexus block.

Inclusion Criteria

- Patient with ASA grade 1 & 2
- Patient in the age group 20-60 years of either gender
- Patients undergoing elective upper limb surgeries below mid-humerus level.

Exclusion criteria

- Negative consent
- Patient with any contraindication to regional anaesthesia.
- Refusal for supra clavicular block.
- Patient with coagulation disorder .
- Patient with asa grade >2.

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3. RESULTS

Table 1: Distribution of study groups according to Age

Group	N	Mean	Std. Deviation	p-value
A	20	43.52	15.01	
B	20	37.51	14.21	0.121 Not significant
C	20	33.77	14.77	
Total	60	37.82	15.1	

P value=0.121 (Not Significant)
The above table shows the distribution of study groups according to Age. In study group A mean age was 43.52 ±15.01 years, in group B mean age was 37.51 ±14.21 years and in group C mean age was 32.55 ±15.1 years.

Table 2: Comparison of study groups according to number of sedation score

ASA GRADE		A	B	C	Total
1	Count % within grp	20	00	20	40
2	Count % within grp	00	20	00	20
Total		20	20	20	60

Chi-square value = 43.00, P value = 0.000, statistically significant
The above table shows the distribution of patients according to Sedation Score.
In Group A, 20 (100%) patients had sedation score 1.
In Group B, 20 (100%) patients had Sedation score 2.
In Group C, 20 (100%) patients had Sedation score 1.

Table 3: Comparison of study groups according to number of sedation score

ASA GRADE		A	B	C	Total
1	Count % within grp	20	20	18	58
2	Count % within grp	00	00	02	02
Total		20	20	20	60

Chi-square value = 2.308, P value = 0.226, statistically not significant
The above table shows the distribution of patients according to Side effects.
In Group A and B all (100%) patients had no side effects.

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In Group C, 18 (90.0%) patients had no side effects but 2 (10. %) facing pruritis as side effects.

4. DISCUSSION

In study group A mean age was 42.25 ±16.206 years, in group B mean age was 38.65 ±13.291 years and in group C mean age was 32.55 ±15.1 years. Similar study done by Soma Ganesh et al in 2019, mean ages of the patients were 32.2±10.36 years in group A and 34.62±10.27 years in group B (group A dexmedetomidine and group B control)[6].
Sukhminderjit et al[3]in 2011, in their study Sedation scores were much better in the RD group and highly significant on statistical comparison (P<0.001)[7]. Patients were randomly divided into two groups: Ropivacaine + Dexmedetomidine (RD) and Ropivacaine + Fentanyl (RF), comprising 50 patie nts each. Inj. Ropivacaine, 15 ml of 0.75%, was administered epidurally in both the groups with addition of 1 μg/kg of dexmedetomidine in RD group and 1 μg/kg of fentanyl in RF group.
We don't get any previous research which indicates sedation score comparing dexmedetomidine and fentanyl in supraclavicular block as adjuvant. Sukhminderjit et al[3]in 2011, in their study) [8]. Incidence of nausea and vomiting was significantly high in the RF group (26% and 12%), while incidence of dry mouth was significantly higher in the RD group (14%) (P<0.05). Patients were randomly divided into two groups: Ropivacaine + Dexmedetomidine (RD) and Ropivacaine + Fentanyl (RF), comprising 50 patie nts each. Inj. Ropivacaine, 15 ml of 0.75%, was administered epidurally in both the groups with addition of 1 μg/kg of dexmedetomidine in RD group and 1 μg/kg of fentanyl in RF group[9].

5. CONCLUSION

In group B Dexmedetomidine 100% had sedation score 2. Dexmedetomidine is superior to fentanyl since it facilitates the spread of the block and offers longer post-operative analgesic duration. In group A and B all the subjects had no side effects but in group C only 10 % had minor side effects. It is concluded Dexmedetomidine seems to be a better alternative to fentanyl as an adjuvant as it provides comparable stable hemodynamic, and establishment of sensory anaesthesia and much better sedation levels.

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