Section: Anesthesiology

Original Research Article

TO EVALUATE THE EFFECTS OF DEXMEDETOMIDINE AND CLONIDINE AS ADJUVANTS TO ROPIVACAINE 0.75% FOR EPIDURAL ANAESTHESIA IN PATIENTS UNDERGOING LOWER LIMB ORTHOPAEDIC SURGERIES: A COMPARATIVE STUDY

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Received : 07/08/2023
Received in revised form : 01/09/2023
Accepted : 11/09/2023

Keywords:
Dexmedetomidine, Clonidine, Ropivacaine, Epidural anaesthesia, Lower limb.

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DOI: 10.47009/jamp.2023.5.5.69

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (5); 348-354

Abstract

Background: Epidural anaesthesia utilises the administration of an injectable medication. The administration of ropivacaine has been shown to provide a very efficient state of anaesthesia and postoperative pain relief. The incorporation of adjuvants into this treatment approach might offer potential benefits. Clonidine and dexmedetomidine are pharmacological agents that belong to the class of α2-agonists. These substances are often used as adjuvants in the context of epidural anaesthesia. The aim is to evaluate the effects of dexmedetomidine and clonidine as adjuvants to ropivacaine 0.75% for epidural anaesthesia in patients undergoing lower limb orthopaedic surgeries. **Materials and Methods:** The research was conducted as a prospective, randomised, with a sample size of 60 patients classified under the American Society of Anaesthesiologists (ASA) grade I and II. Following the acquisition of signed and informed permission from the participants, a randomization process using the envelope technique was used to assign the patients into two equal groups, namely Group-RD and Group-RC. The patients in Group-RD (n=30) were administered a dosage of 17 ml of 0.75% Inj. Ropivacaine and 1 µg/kg of Inj. Dexmedetomidine, whereas the patients in Group-RC (n=30) were given a dosage of 17 ml of 0.75% Inj. Ropivacaine and 1 µg/kg of Inj. Clonidine. **Result:** The level of sedation seen in Group-RD was shown to be statistically significant in comparison to Group-RC during the time frame of 25 to 60 minutes ($p < 0.05$) (Table-2). However, the difference between the two groups was not statistically significant after 60 minutes ($p > 0.05$. The assessment of motor blockage was conducted on the Modified Bromage scale. A score of 2 was attained within 10 minutes in Group-RD, whereas in Group-RC it was obtained around the 15-minute mark. Additionally, the majority of patients achieved this level between 10 and 20 minutes. In all patients, a score of 4 was attained within 40 minutes in Group-RD and within 60 minutes in Group-RC. The statistical analysis revealed a significant difference in the mean Bromage score between the time intervals of 5 minutes and 35 minutes ($p < 0.05$). After a duration of 40 minutes, the observed results were found to be statistically insignificant, as shown by a p-value greater than 0.05. The mean systolic blood pressure exhibited similar values in both groups, and there was no statistically significant difference seen between the two groups ($p > 0.05$) during all time periods. Both the groups were comparable with respect to diastolic blood pressure and it was statistically not significant ($p > 0.05$) across all intervals of time. **Conclusion:** The addition of Clonidine and Dexmedetomidine as adjuvants to ropivacaine in epidural anaesthesia leads to the maintenance of stable hemodynamic parameters, as evaluated by changes in heart rate, systolic and diastolic blood pressure. Furthermore, the observed differences in these parameters are not statistically significant. The adjusted Bromage scores and sedation scores exhibit similarity over the majority of time periods. When epidurally delivered, these substances have been shown to be safe with little occurrence of side effects.

INTRODUCTION

Epidural anaesthesia, a widely used method of central neuraxial blocking, is highly favoured for surgical procedures involving the lower abdomen and lower limbs. Central neuraxial blockade methods provide many benefits over general anaesthesia, including the avoidance of airway procedures, polypharmacy, and other undesirable effects such as postoperative nausea, vomiting, and the need for additional intravenous analgesics.[1] Epidural anaesthesia has superior hemodynamic stability compared to spinal anaesthesia, making it a more suitable choice for extended surgical procedures. One advantage of epidural anaesthesia compared to general anaesthesia is the avoidance of intubation and extubation reactions, allowing for the option to provide postoperative analgesia. Among the several local anaesthetic medications used for epidural anaesthesia, lignocaine and bupivacaine are widely recognised as the most often employed options. The use of bupivacaine in the epidural space is widespread; nonetheless, a significant concern arises from the potential occurrence of unintentional intravascular injection, which may result in cardiac arrest and provide challenges for resuscitation efforts. Ropivacaine, a pure S-enantiomer, is a newly developed long-acting amide local anaesthetic generated from bupivacaine. It is said to have less cardiovascular adverse effects when compared to the latter. According to existing literature, Ropivacaine has been seen to possess a more favourable cardiovascular profile compared to bupivacaine. Specifically, Ropivacaine has demonstrated reduced cardiac depressive effects, decreased propensity for arrhythmias, and diminished cardiotoxic and neurotoxic properties, as supported by many studies.[2-5] In order to mitigate anxiety resulting from being awake during a medical procedure, it may be necessary to provide high dosages of sedative or even general anaesthesia when using the epidural anaesthesia approach. The absence of constant verbal communication with the patient undermines the original intention of regional anaesthesia. Therefore, in order to address this issue, it is possible to use an adjuvant in conjunction with epidural local anaesthetics. This adjuvant would provide sedation, maintain stable hemodynamic circumstances, and enable the provision of seamless and extended postoperative analgesia. Additionally, it would allow for a decrease in the dosage of Ropivacaine. Alpha 2 (α2) adrenergic receptor agonists possess analgesic and sedative characteristics when used as an adjunct to local anaesthetic in the context of regional anaesthesia.[6–11] Dexmedetomidine is a pharmacological agent that exhibits a reasonably high degree of selectivity for α2 adrenergic receptors. The majority of patients who received Dexmedetomidine exhibited effective sedation, while also demonstrating a distinct characteristic of being readily arousable, which is not often seen with other sedatives. Dexmedetomidine has inhibitory effects on the activity of the descending noradrenergic pathway, hence modulating the transmission of nociceptive neurotransmitters and interrupting the propagation of pain signals, ultimately resulting in analgesic effects. The hypnotic and supraspinal analgesic effects are achieved through the hyperpolarization of noradrenergic neurons. This hyperpolarization leads to the suppression of neuronal firing in the locus ceruleus, as well as the inhibition of norepinephrine release and activity in the descending medullospinal noradrenergic pathway. These effects are a result of the activation of central α2 adrenergic receptors. The inhibition of inhibitory control leads to the activation of neurotransmitters that reduce the release of histamine, resulting in a state of hypnosis that closely resembles natural sleep. This calming effect of Dexmedetomidine is very desirable due to its lack of respiratory depression, making it an almost perfect sedative.[12,13] Clonidine is a well-established agonist of α2 adrenoceptors that has antihypertensive effects. The administration of this substance through the epidural route elicits an analgesic effect, mostly mediated via α2 adrenoceptors located in the dorsal horn of the spinal cord. Clonidine has been shown to be a beneficial adjunct to opioids and local anaesthetic agents in providing postoperative analgesia after large abdominal surgery and orthopaedic procedures.[14] The administration of clonidine has been shown to augment both the sensory and motor blockage resulting from the epidural injection of a local anaesthetic.

MATERIALS AND METHODS

The research was conducted as a prospective, randomised, double-blinded trial with a sample size of 60 patients classified under the American Society of Anaesthesiologists (ASA) grade I and II. Prior to commencement, the study received clearance from the Institutional Ethics Committee. The research comprised patients who were planned to have elective procedures on the lower limbs orthopaedic surgeries, which required the use of epidural anaesthesia. Prior to their participation, written and informed permission was obtained from these patients. The exclusion criteria encompassed various factors, including patients refusal to participate in the study, exceeding a weight of 120 kilogrammes, falling below a height of 150 centimetres, having a history of diabetes mellitus, hypertension, cardiac illnesses such as ischemic heart disease or valvular heart disease, respiratory diseases like bronchial asthma or chronic obstructive pulmonary disease (COPD), central nervous system problems such as stroke or TIA, psychiatric illnesses, presence of electrocardiogram (ECG) changes indicative of heart block, usage of β-blockers and α2-antagonists, coagulation abnormalities, and known allergies to any of the medications employed in the study. The

ISSN (O): 2687-5365; ISSN (P): 2753-6556

research excluded individuals who were pregnant or lactating. The research also eliminated patients who had contraindications for epidural anaesthesia.

Following the acquisition of signed and informed permission from the participants, a randomization process using the envelope technique was used to assign the patients into two equal groups, namely Group-RD and Group-RC. The patients in Group-RD (n=30) were administered a dosage of 17 ml of 0.75% Inj. Ropivacaine and 1 µg/kg of Inj. Dexmedetomidine, whereas the patients in Group-RC (n=30) were given a dosage of 17 ml of 0.75% Inj. Ropivacaine and 1 µg/kg of Inj. Clonidine.

A comprehensive preoperative assessment was conducted for all patients before to their planned operation. This assessment included gathering patient history, conducting a thorough physical examination, documenting vital signs, doing a systemic examination, and evaluating the airway and spine. The laboratory investigations included a CBC,PT/INR, CXR, HIV, HBSag, blood urea and serum creatinine analysis, serum electrolyte assessment, and electrocardiogram (ECG) evaluation. Additional investigations, if deemed essential, were conducted based on the patients' evaluation.

All patients were instructed to observe a fasting period of 8 hours for food and 2 hours for clear fluids before the administration of anaesthesia. Furthermore, it should be noted that all patients were administered Tab. Ranitidine 150 mg and Tab. Ondansetron 4 mg, accompanied by small amounts of water, throughout the evening before the surgical procedure and within a 2-hour timeframe prior to the initiation of anaesthesia. The process of obtaining venous access included the use of an 18-gauge intravenous cannula. Patients had a systematic examination and baseline vital signs were recorded on the day of the surgical procedure. The patients were administered a preload of 10 ml/kg of crystalloids, namely Ringers' lactate for a duration of 20 minutes. Continuous monitoring of patients in the operating theatre involves the use of many techniques, such as a 5-lead electrocardiogram (ECG), NIBP measurement, and SpO2. The researchers first documented the baseline vital signs of the patients and ensured that they were positioned correctly in preparation for the administration of epidural anaesthesia. The lumbar spine was palpated and the skin was infiltrated with 2 ml of 2% Injection Lignocaine in the L2-L5 area, following rigorous aseptic procedures. The epidural space was accessed with the loss of resistance method with air, employing an 18G Touhy needle. Subsequently, an 20G epidural catheter was carefully inserted into the epidural space, advancing it a distance of 5 centimetres, and correctly secured in place. A first dosage of 3 ml of 2% Injection Lignocaine with adrenaline (5µ/ml) was delivered through the epidural route in order to ascertain the absence of intravascular or subarachnoid positioning of the epidural catheter. The delivery of the study medication preparation occurred subsequent to the administration of a test dosage. The heart rate, blood pressure, respiratory rate, and SpO2 of the patients were recorded at 5-minute intervals. All patients were administered oxygen through a face mask at a flow rate of 5 litres per minute. The condition of hypotension, characterised by a decrease in mean arterial pressure exceeding 20% from the initial level, was managed by the administration of intravenous Mephentermine at a dosage of 6 mg. Similarly, bradycardia, defined as a heart rate below 50 beats per minute, was addressed by administering intravenous Atropine at a dosage of 0.6 mg. The management of respiratory depression, characterised by a respiratory rate (RR) of less than 8 breaths per minute or SpO2 below 90%, included the use of intermittent positive pressure ventilation with the administration of 100% oxygen. Nausea and vomiting were managed with the administration of a 4 mg intravenous injection of Ondansetron. The assessment of sensory blockage was conducted bilaterally using the pin prick technique, starting from the distal to proximal level of the dermatome. The assessment of motor blockage was conducted using the Modified Bromage Scale, whereas the evaluation of sedation levels was performed employing the Ramsay Sedation Scale. The study included the observation of many parameters, including the duration taken to achieve a sensory block at the T10 level, the highest degree of sensory block reached, changes in systolic and diastolic blood pressure, motor blockade measured using the modified Bromage scale, and sedative levels assessed using the Ramsay sedation grading system. The study closely observed, documented, and appropriately managed adverse effects, including but not limited to nausea, vomiting, shivering, dryness of mouth, urine retention, and respiratory depression. The surgical procedure was conducted subsequent to the verification of sensory blockage extending to the T10 level, and upon achieving a state of full motor blockade. Following the conclusion of the surgical operation, patients were transferred to the recovery room, and then moved to the post-operative room. The patients were provided with education and instructions to report any pain at the surgical incision site to the postoperative staff nurse, who was unaware of the research. The duration of analgesia was measured by documenting the period from the initiation of sensory blockage to the point at which the patient reported experiencing pain at the surgical site. The study was terminated at the occurrence of discomfort or pain at the incision site of the surgical procedure.

Statistical Analysis

The data obtained from all the patients was documented in a comprehensive chart. The statistical analysis was conducted using SPSS 25.0 software. The Kruskal-Wallis chi-square test was used to assess the significance of differences between quantitative variables, while Yate's chi-square test was utilised for

ISSN (O): 2687-5365; ISSN (P): 2753-6556

qualitative variables. A significance level of less than 0.05 was used to determine statistical significance.

RESULTS

All participants who were enrolled in the research remained in their respective study group until the conclusion of the investigation, and no participants were subsequently eliminated for any reasons. There were no significant differences seen between the two groups of patients in terms of age, gender, height, and weight (Table 1). While there was a higher proportion of males in both groups, it should be highlighted that this observation was only coincidental and did not reach statistical significance [Table 1]. There were no significant variations seen across patients in terms of ASA grading (p=0.17) and duration of surgery (p=0.21).

The sedation score of the patients was also observed and found to be similar in terms of the average sedation score at the beginning of the study. The majority of patients in both groups were administered sedation, resulting in a score ranging from 2 to 4, within a time frame of 15 to 90 minutes. The level of sedation seen in Group-RD was shown to be statistically significant in comparison to Group-RC during the time frame of 25 to 60 minutes ($p < 0.05$) [Table 2]. However, the difference between the two groups was not statistically significant after 60 minutes ($p > 0.05$), as seen in [Table 2].

The assessment of motor blockage was conducted on the Modified Bromage scale. A score of 2 was attained within 10 minutes in Group-RD, whereas in Group-RC it was obtained around the 15-minute mark. Additionally, the majority of patients achieved this level between 10 and 20 minutes. In all patients, a score of 4 was attained within 40 minutes in Group-RD and within 60 minutes in Group-RC, as shown in Table 3. The statistical analysis revealed a significant difference in the mean Bromage score between the time intervals of 5 minutes and 35 minutes ($p < 0.05$). After a duration of 40 minutes, the observed results were found to be statistically insignificant, as shown by a p-value greater than 0.05, as shown in [Table 3].

The heart rate was measured at 5-minute intervals, and the average heart rates were found to be similar between the two groups at all time intervals. These findings were not statistically significant ($p > 0.05$) during the whole process. No instances of patients experiencing bradycardia requiring the administration of Inj. Atropine were observed. [Table 4]

Systolic blood pressure measurements were taken at 5-minute intervals in both experimental groups. There was an absence of a substantial decrease in systolic blood pressure from the first measurement, and it consistently maintained proximity to the baseline values for the whole of the process. The mean systolic blood pressure exhibited similar values in both groups, and there was no statistically significant difference seen between the two groups ($p > 0.05$) during all time periods. [Table 5]

Table 1: Basic profile of the patients

Parameters	Group- RC	Group- RD	'p' value
Gender			0.36
Male	20	25	
Female	10	5	
Age in years	46.05 ± 5.88	44.96 ± 5.71	0.25
Height (cms)	157.12 ± 4.63	160.02 ± 3.74	0.18
Weight (kgs)	57.06 ± 3.81	55.58 ± 4.96	0.63
ASA grade			0.17
I	20	25	
II	10	5	
Duration of surgery (minutes)	113.69± 11.69	136.96 ± 12.89	0.21

Table 2: Sedation Scores (Ramsay Sedation Score)

Sedation Score	Group RC		Group RD		'p' value
	Mean	SD	Mean	SD	
5 min	1.11	0.25	1.11	0.25	0.24
10	1.63	0.49	1.70	0.47	0.36
15	2.25	0.44	2.79	0.71	0.19
20	2.89	0.56	3.37	0.47	0.05
25	2.83	0.67	3.91	0.71	0.001
30	3.11	0.71	3.91	0.61	0.001
40	2.71	0.48	3.69	0.41	0.003
60	2.77	0.69	3.21	0.52	0.63
80	2.45	0.64	2.71	0.49	0.41
100	2.16	0.49	1.92	0.61	0.25
120	1.71	0.39	1.23	0.36	0.34
140	1.19	0.31	1.11	0.27	0.21
160	1.11	0.25	1.11	0.25	-
180	1.11	0.25	1.11	0.25	-

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 3. Motor Blockade (Bromage)

Motor blockade (Bromage)	Group RC		Group RD		'p' value
	Mean	SD	Mean	SD	
5 min	1.14	0.19	1.14	0.22	0.69
10	1.58	0.36	2.32	0.26	0.001
15	2.01	0.32	2.33	0.41	0.04
20	2.96	0.44	3.76	0.37	0.001
25	3.59	0.77	3.89	0.45	0.03
30	3.81	0.55	3.99	0.56	0.04
40	3.91	0.54	4.23	0.63	0.63
60	3.99	0.29	4.57	0.34	0.24
80	4.55	0.69	4.55	0.65	0.27
100	4.55	0.69	4.55	0.69	0.29
120	4.55	0.69	4.55	0.69	0.21
140	3.77	0.74	3.99	0.52	0.22
160	3.65	0.29	3.99	0.34	0.15
180	3.61	0.21	3.92	0.32	0.19

Table 4: Heart Rate/Min

Heart Rate/Min	Group RC		Group RD		P-Value
	Mean	Sd	Mean	Sd	
5 minutes	72.49	4.73	73.58	4.16	0.19
10 minutes	71.55	4.31	72.98	4.34	0.27
15 minutes	70.03	4.84	71.65	2.63	0.41
20 minutes	70.12	4.73	70.98	3.28	0.21
25minutes	71.88	4.86	71.88	3.41	0.11
30 minutes	71.26	3.34	73.55	3.36	0.24
40 minutes	71.11	2.57	72.87	3.88	0.26
60 minutes	70.58	4.53	72.15	3.63	0.23
80 minutes	71.25	4.66	71.99	3.41	0.12
100 minutes	71.03	3.34	71.87	3.79	0.31
120 minutes	71.85	2.97	72.56	3.82	0.37
140minutes	72.06	4.53	73.88	3.34	0.37
160minutes	71.06	4.36	70.52	3.51	0.27
180 minutes	70.22	3.14	69.87	3.19	0.31

Table 5: Systolic blood pressure

	Group RC		Group RD		P-Value
	Mean	Sd	Mean	Sd	
5 minutes	123.47	3.15	125.56	5.17	0.25
10 minutes	123.75	3.63	125.63	5.52	0.37
15 minutes	124.52	3.52	125.98	4.66	0.19
20 minutes	124.85	3.93	126.45	4.63	0.27
25minutes	124.96	3.71	126.63	4.71	0.21
30 minutes	125.41	3.41	126.74	4.26	0.36
40 minutes	113.58	2.57	113.24	4.29	0.21
60 minutes	115.89	4.96	115.24	4.41	0.21
80 minutes	116.74	3.41	116.23	3.51	0.16
100 minutes	117.58	3.63	117.96	4.83	0.32
120 minutes	118.96	2.11	118.99	2.93	0.31
140minutes	120.74	4.51	120.87	2.17	0.33
160minutes	111.12	4.06	111.12	2.57	0.19
180 minutes	110.14	4.17	110.03	3.12	0.26

Table 6: Diastolic blood pressure

	Group RC		Group RD		P-Value
	Mean	Sd	Mean	Sd	
5 minutes	75.15	3.69	72.15	3.66	0.12
10 minutes	71.52	2.85	71.51	2.98	0.32
15 minutes	69.45	2.74	71.03	2.87	0.21
20 minutes	68.15	2.56	71.01	2.75	0.22
25minutes	68.13	2.47	70.85	2.66	0.63
30 minutes	68.11	2.36	70.65	2.22	0.24
40 minutes	68.18	2.74	70.85	2.52	0.31
60 minutes	69.98	2.48	72.58	2.36	0.25
80 minutes	69.15	2.33	71.66	2.85	0.15
100 minutes	68.74	2.21	70.85	2.47	0.16
120 minutes	68.41	2.89	70.69	2.63	0.23
140minutes	68.41	2.47	70.15	2.34	0.22
160minutes	68.14	2.36	70.25	2.74	0.37
180 minutes	67.02	2.87	70.25	2.63	0.48

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Diastolic blood pressure was also recorded every 5 minutes and there was no significant drop from the baseline values. Both the groups were comparable with respect to diastolic blood pressure and it was statistically not significant ($p > 0.05$) across all intervals of time.

DISCUSSION

The use of neuraxial opioids is linked to a limited number of adverse effects. Consequently, several alternatives, including α-2 agonists, are now undergoing thorough evaluation as potential substitutes, with particular attention given to mitigating opioid-related side effects such as respiratory depression, nausea, urine retention, and pruritus. The administration of these medicines by epidural route is correlated with drowsiness, analgesia, anxiolysis, hypnosis, and sympatholysis. Over the last decade, Clonidine has shown effective use for the aforementioned purpose. Additionally, the emergence of dexmedetomidine has expanded the range of α-2 agonists in the field of regional anaesthesia. The expeditious initiation of local anaesthetics, prompt attainment of sensory and motor blockade, extended analgesic effects throughout the post-operative phase, dose-conserving properties of local anaesthetics, and consistent maintenance of cardiovascular parameters collectively render these agents highly efficacious as adjuncts in regional anaesthesia.[15] Epidural anaesthesia is often used in surgical procedures involving the lower abdomen and lower limbs, particularly in cases where the operation is expected to be of extended duration or where postoperative pain management is desired. Ropivacaine, an extended-duration amide local anaesthetic, has favourable anaesthetic and analgesic properties when supplied by epidural administration.[16] In comparison to bupivacaine, it has less cardiotoxicity and neurotoxicity. Therefore, its use has seen a significant rise over the course of the last ten years. Ropivacaine was selected over bupivacaine due to its lower occurrence of cardiotoxicity and neurotoxicity. The use of adjuvants to local anaesthetics has been shown to enhance the efficacy of analgesia and motor blockage.[17] A diverse range of adjunctive drugs have been administered epidurally in conjunction with local anaesthetics, and among these treatments are α2-agonists, which belong to a specific class. Clonidine and dexmedetomidine are classified as α2-agonist medications.[18] Perioperatively, these substances are used to induce drowsiness, alleviate anxiety, and mitigate the pressor reaction associated with laryngoscopy and endotracheal intubation. Neuraxial administration of these substances has been used, demonstrating improved analgesic quality and prolonged duration.[18] The α2 receptor specificity of dexmedetomidine is higher (α2:α1 = 1620:1) in comparison to clonidine (α2:α1 = 220:1).[19] Therefore, our objective was to conduct a comparative analysis of the epidural administration of clonidine and dexmedetomidine as adjuvants to ropivacaine. We aimed to observe any changes in heart rate and blood pressure, as well as measure sedation levels and motor blockage using the modified Bromage scale. A comparative research was conducted to assess the effects of epidural clonidine (2 µg/kg) and dexmedetomidine (1.5 µg/kg) in combination with Inj. Ropivacaine (17 ml). The study findings revealed that both interventions yielded similar and consistent hemodynamic profiles, with no statistically significant differences observed. Additionally, it was shown that dexmedetomidine yielded greater sedation ratings compared to clonidine, with statistical significance ($p < 0.05$). The researchers reached the conclusion that dexmedetomidine is a superior medication in comparison to clonidine in terms of the speed at which analgesia is achieved, the effectiveness of pain reduction after surgery, and the sedation score.[20] In the present investigation, a dosage of 1 µg/kg of dexmedetomidine or clonidine was administered. Our work aligns with the aforementioned findings in relation to haemodynamic parameters. However, we observed statistically significant sedation and motor blockage only over a short duration, and thereafter, the statistical significance diminished. In a separate investigation, the administration of dexmedetomidine (1 µg/kg) and clonidine (2 µg/kg) in conjunction with epidural bupivacaine (15 ml) yielded noteworthy findings. Specifically, the use of dexmedetomidine resulted in statistically significant motor blockade and sedation ratings in comparison to clonidine. Despite the fact that the dosage of clonidine (2 µg/kg) administered was larger than that of dexmedetomidine (1 µg/kg), it led to lower levels of motor blockage and sedation ratings. Nevertheless, the haemodynamic parameters analysed in both groups exhibited a comparable and statistically non-significant outcome.[21] A research investigation was undertaken whereby the administration of 1 µg/kg of dexmedetomidine or clonidine, in conjunction with epidural ropivacaine (15 ml), was examined. The findings indicated that there was no statistically significant disparity detected in terms of haemodynamic parameters and motor blockage. Nevertheless, the administration of dexmedetomidine yielded sedation ratings that were shown to be statistically significant in comparison to clonidine.[22] Our findings is consistent with the aforementioned studies in terms of the dosage of dexmedetomidine and clonidine administered. However, it was observed that there were statistically significant differences in motor blockage and sedation ratings between Group-RD and Group-RC, but only for a short duration. No significant detrimental effects were seen in any of the groups.

CONCLUSION

The addition of Clonidine and Dexmedetomidine as adjuvants to ropivacaine in epidural anaesthesia leads

ISSN (O): 2687-5365; ISSN (P): 2753-6556

to the maintenance of stable hemodynamic parameters, as evaluated by changes in heart rate, systolic and diastolic blood pressure. Furthermore, the observed differences in these parameters are not statistically significant. The adjusted Bromage scores and sedation scores exhibit similarity over the majority of time periods. When epidurally delivered, these substances have been shown to be safe with little occurrence of side effects.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556