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Comparision of intravenous Dexmedetomidine and Tramadol for post spinal anaesthesia shivering - A hospital based randomized double blind study.

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Abstract
Background: *Shivering, a common post anesthesia occurrence is defined as involuntary, repetitive activity of skeletal muscles.The incidence of shivering has been found to be quite high, approximately 40-50% . Various drugs are available for treating shivering like Tramadol, Pethidine, Dexmedetomidine. The need to find a better drug which has comparable efficacy to tramadol and at the same time has less of side effects.*
Aims and objectives:*To compare the anti shivering effect of Dexmedetomedine with that of Tramadol after spinal anaesthesia.*
Materials & Method :*Total of 60 patients scheduled for elective abdominal and lower limb surgeries under spinal anaesthesia were included.Patients were assigned by sealed envelope method into two groups, Group D (n=30) received Inj. Dexmedetomedine 0.5mcg/kg and Group T (n=30) received Inj. Tramadol 0.5mg/kg. on developing post spinal shivering.Rescue drug Inj Pethidine 20mg IV Stat given if there is recurrence.*
Results: *Dexmedetomedine takes lesser time to control shivering than Tramadol(p 0.01). 2 patients in group D(6.7%)and 5 patients in group T(16.7%)had recurrence of shivering and were given rescue drug(p 0.35).Patients in group D(grade 4 sedation score) were more sedated than group T(grade2). 23.3% had nausea and16.7% had vomiting in group T(p 0.01) and none in group D. 30% of patient in groupD had hypotension and 16.7% had bradycardia while none in groupT.*
Discussion: *This study shows Dexmedetomedine is more effective in controlling in post spinal anaesthesia shivering when compared with Tramadol. Dexmedetomedine has an added advantage of sedation but fewer side effects like hypotension and bradycardia. Tramadol has no added advantage of sedation and also causes nausea and vomiting.*
Conclusion: *This study shows Dexmedetomidine is more effective in controlling in post spinal anaesthesia shivering when compared with Tramadol. Dexmedetomidine has an added advantage of sedation but fewer side effects like hypotension and bradycardia. Tramadol has no added advantage of sedation and also causes nausea and vomiting.*
Keywords: Shivering, Dexmedetomidine, Tramadol

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I. Introduction:

Shivering, a common post anesthesia occurrence is defined as involuntary, repetitive activity of skeletal muscles.The incidence of shivering has been found to be quite high, approximately 40-50% .It is associated with increased oxygen consumption, carbon dioxide production, and metabolic rate. It may also interfere with intraoperative monitoring of electrocardiogram, blood pressure (BP), and pulse oxygen saturation.[1]

Shivering is a physiological response to core hypothermia in an attempt to raise the metabolic heat production. The main causes of intra/post-operative shivering are temperature loss, increased sympathetic tone, pain, and systemic release of pyrogens.2

Spinal anaesthesia significantly impairs the thermoregulation system by inhibiting tonic vasoconstriction, which plays a significant role in temperature regulation. It also causes a redistribution of core heat from the trunk (below the block level) to the peripheral tissues. These factors predispose patients to hypothermia and shivering.[2]

Dexmedetomidine is a highly selective a2-adrenoceptor agonist that has been used as a sedative and is known to increase shivering threshold.[3]

Tramadol is a synthetic opioid commonly used drug for post-spinal anaesthesia shivering.The anti-shivering action of tramadol is mediated via its opioid or serotonergic and noradrenergic activity or both.But

tramadol may cause nausea and vomiting which is very distressing for the patient. Hence the need to find a better drug which has comparable efficacy to tramadol and at the same time has less of side effects.[4]

The aim of the study was to compare the efficacy of dexmedetomidine and tramadol in the treatment of post-spinal anesthesia shivering as well as their side-effect profile.

II. Materials and Methodology

Study Design and Population

A study was conducted from March 2023 to June 2024 in the Department of Anaesthesiology - AIMSRC Devanahalli.

Total of 60 patients scheduled for elective abdominal and lower limb surgeries under spinal anaesthesia were included. Patients belonging to ASA I and lI, aged between 18-60years were included in the study. Patients with known contraindications for spinal anaesthesia and known allergy to study drugs were excluded.

Based on study conducted by Mittal G[5],et al sample size calculated as 60.

Methodology

Patients were assigned by sealed envelope method into two groups,

Group D (n=30) received Inj Dexmedetomidine 0.5mcg/kg and

Group T (n=30) received Inj Tramadol 0.5mg/kg. on developing post spinal shivering.

Patient shifted to OT, standard ASA monitors connected. SAB given in lateral position at L3-L4/ L4-L5 space with 25G Quincke's needle with 3ml of 0.5%. Bupivacaine heavy using midline approach and patient were made to supine after SAB. OT was maintained at an ambient temp of 22-24°C.Patient were draped but not actively warmed.

Patients who developed shivering during surgery were given study drug.Time required for cessation of shivering after study drug given was noted.

Recurrence of shivering again was also noted.Side effects like nausea/vomiting, hypotension, bradycardia were noted.

Rescue drug Inj Pethidine 20mg IV Stat given if there is recurrence.

Inj Ondensation 8mg IV stat given for nausea and vomiting.

III. Results

Results were tabulated and statistically analysed.Unpaired t-test used for analysis. P value of <0.05 was taken as significant.

	Dexmedetomidine(30)	Tramadol (30)	P value
Age (years)	35± 15	36± 12	0.68
Gender (male/female)	17/13	16/14	0.34
Duration of surgery (min)	60±20	64±18	0.27
Duration of spinal anaesthesia(min)	130±16	128±18	0.28

Table 1. Demographic data

	Dexmedetomidine (30)	Tramadol (30)	P value
Onset of shivering(min)	22.5 ± 2.8	24.1±3.2	0.03
Time for cessation of shivering	5.3 ±1.0	7.1± 1.3	0.01
Recurrence	2/30 (6.7%)	5/30 (16.7%)	0.35

Table 2. Comparing time of cessation of shivering after study drugs

This study indicates Dexmedetomidine takes lesser time to control shivering than Tramadol(p 0.01). 2 patients in group D(6.7%) and 5 patients in group T(16.7%)had recurrence of shivering and were given rescue drug(p 0.35).

	Dexmedetomidine(30)	Tramadol (30)	P value
Nausea	0	7 (23.3%)	0.01
Vomiting	0	5 (16.7%)	0.02
Hypotension	6(20%)	0	0.02
Bradycardia	5(16.7%)	0	0.02

Table 3. Comparing side effects of study drugs.

Nausea and vomiting were higher in groupT,23.3% had nausea and16.7% had vomiting in group T(p 0.01) and none in group D. Patient with groupD had Hypotension 30%and bradycardia16.7% while none in groupT.

IV. Discussion

In a similar study conducted by Mittal G,et al (2014)at Dayanand medical college and hospital, Ludhiana , Punjab in 50 patients undergoing surgeries having shivering after spinal anaesthesia found that time taken for cessation of shivering was significantly less with dexmedetomidine (2.52 ± 0.44 min)when compared to tramadol (5.92 ± 0.81 min) (P < 0.0024). The recurrence rate of shivering with dexmedetomidine was less (4%) as compared to tramadol (8%). Nausea and vomiting was observed only in tramadol group (28% and; 20% respectively). There was not much difference in the sedation profile of both the drugs.5

In a similar study conducted by Kundra TS,et al (2017)at Sri Jayadeva Institute of cardiovascular sciences and research centre, Bengaluru in 100 patients having shivering after spinal anaesthesia showed cessation of shivering in both groups Tramadol and Dexmedetomidine. The time to cessation of shivering was significantly less with dexmedetomidine (174.12 ± 14.366 s) than with tramadol (277.06 ± 23.374 s) (P < 0.001). The recurrence rate of shivering with dexmedetomidine was less (6%) as compared to tramadol (16%). Nausea and vomiting was found to be higher in the case of tramadol.6

V. Conclusion

This study shows Dexmedetomidine is more effective in controlling in post spinal anaesthesia shivering when compared with Tramadol. Dexmedetomidine has an added advantage of sedation but fewer side effects like hypotension and bradycardia. Tramadol has no added advantage of sedation and also causes nausea and vomiting.

References

[1]. Ramesh K, Bhushanam KN, Sharma BA, Kumar SS. A clinical comparative study between intravenous dexmedetomidine and tramadol for control of post spinal anesthesia shivering. J Dent Med Sci. 2019;18:26-31.
[2]. Sessler DI. Temperature regulation and monitoring. In: Millar RD, editor. 7th ed. Textbook of Anaesthesia. New York: Churchill Livingstone Inc.; 2010. p. 1533-56
[3]. Micheal A Gropper ,Neal H,Lars I,Lee A, Kate L,Jeanine P editors .Millers anaesthesia 9th edition Elsevier .2020 .p.no. 674-675.
[4]. Mathews S, Al Mulla A, Varghese PK, Radim K, Mumtaz S. Postanaesthetic shivering – A new look at tramadol. Anaesthesia 2002;57:394-8.
[5]. Mittal G, Gupta K, Katyal S, Kaushal S. Randomised double-blind comparative study of dexmedetomidine and tramadol for post-spinal anaesthesia shivering. Indian J Anaesth 2014;58:257-62.
[6]. Kundra TS, Kuthiala G, Shrivastava A, Kaur P. A comparative study on the efficacy of dexmedetomidine and tramadol on post-spinal anesthesia shivering. Saudi J Anaesth 2017;11:2-8.