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Research Article

LOW DOSE TRAMADOL VERSUS KETAMINE: WHICH IS MORE EFFECTIVE TO COUNTER PREOPERATIVE SHIVERING DUE TO SPINAL ANESTHESIA AMONG ABDOMINAL SURGERIES PATIENTS

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Abstract:

***Objective:** The objective of this research was to draw a comparison between prophylactic efficacy with low dose tramadol and ketamine to prevent shivering of the patients in the course of spinal anaesthesia while experiencing abdominal surgeries.*

***Material and methods:** This comparative research was carried out at Services Hospital, Lahore from September 2017 to April 2018. We enrolled 64 patients of both genders having physical status (ASA) with Class I & II in the bracket of (18 – 50) years. These patients were about to experience an elective lower abdominal surgery in a supine position. The nature of procedure was general which included hernioplasty, cystolithotomy, appendectomy and gynaecological procedures including vaginal and abdominal hysterectomy; whereas, we did not included unwilling patients, blood transfusion requirement cases, pregnant patients, blood product requirement patients, patients with BMI above 30 (Obese), coagulopathy (platelets count under 80,000), having abscess at injection site, Hemodynamically unstable patients (BP under 100 mmHg) and all those patients who were allergic to local anesthetics. After fulfilling inclusion criteria, the patients were distributed randomly in two groups respectively Group – K & T.*

***Results:** The mean age of Group – K was (28.13 ± 6.19) and mean age of Group – T was (28.41 ± 5.97) years. In terms of efficacy of both the groups the efficacy of Group – K was reported in 6 patients (18.75%); whereas, in Group – T the efficacy was reported in 15 patients (46.88%). The remaining cases without efficacy in both groups were respectively in Group – K as 26 (81.5%) and in Group – T as 17 (53.12%). P-Value was taken as (0.01) that shows a significant difference.*

***Conclusion:** Outcomes suggest that while making a comparison of both the groups about the effectiveness of prophylactic low dose tramadol with ketamine with tramadol to prevent shivering of the patients in the course of spinal anaesthesia while experiencing abdominal surgeries; tramadol is less effective than Ketamine. The effectiveness of Ketamine is superior to manage an onset of shivering among patients.*

***Keywords:** Abdominal Surgery, Prophylactic, Spinal Anesthesia, Ketamine, Low Dose, Tramadol and Shivering.*

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INTRODUCTION:

Spinal Anesthesia faces a common issue of preoperative shivering of the patients. The occurrence rate of preoperative shivering is 33% among patients. Spinal anaesthesia due to sympathetic blockade leads to vasodilation and it also results in the heat redistribution. It also causes the thermoregulatory system modification in 100% consumption, hypothalamus, arterial hypoxia, increased myocardial ischemia risk, pulse oximetry and Echocardiography interference. Normally, perioperative hypothermia and shivering are preventable through physical and pharmacological techniques such as warming the surface and using drugs (pethidine, clonidine, fentanyl, ondansetron, alfentanil, etc. [1 – 7]. Various opioids and non-opioids are used to control shivering. Tramadol is a synthetic opioid which is helpful to prevent shivering through noradrenaline and Serotonin inhibitory reuptake. It is also equally effective as shivering prophylaxis [8]. Ketamine is one of the equivalent effective NMDA receptor antagonists for the shivering prophylaxis [9].

Normally, surgical practice relies on the use of Tramadol as they are not fully conversant with the use of Ketamine as shivering prophylaxis. Therefore, our plan was to investigate the effects of both the drugs and share the outcomes with healthcare professionals for future patient's management. Krishna also studied the low dose Tramadol, Ketamine and Pethidine in his series on the patients experiencing spinal anaesthesia to counter preoperative shivering. His outcomes conclude that in Tramadol the shivering was (40%); whereas, it was low in the Ketamine group (13%) with a significant P-Value of (< 0.05).

METHODOLOGY:

This comparative research was carried out at Services Hospital, Lahore from September 2017 to April 2018. We enrolled 64 patients of both genders having physical status (ASA) with Class I & II in the bracket of (18 – 50) years. These patients were about to experience an elective lower abdominal surgery in a supine position. The nature of procedure was general which included hernioplasty, cystolithotomy,

appendectomy and gynaecological procedures including vaginal and abdominal hysterectomy; whereas, we did not included unwilling patients, blood transfusion requirement cases, pregnant patients, blood product requirement patients, patients with BMI above 30 (Obese), coagulopathy (platelets count under 80,000), having abscess at injection site, Hemodynamically unstable patients (BP under 100 mmHg) and all those patients who were allergic to local anesthetics. After fulfilling inclusion criteria, the patients were distributed randomly in two groups respectively Group – K & T. We prewarmed the preloading fluid at a temperature of 37°C. Every patient was preloaded with an injection of (500 ml) and Haes Sterile (6%) IV before the management of spinal anaesthesia. We took all necessary aseptic precaution and performed SAB at L – 3 & 4 interspaces with the help of a pencil point needle (27 G) and intrathecally injected 0.5% heavy Bupivacaine (3 ml).

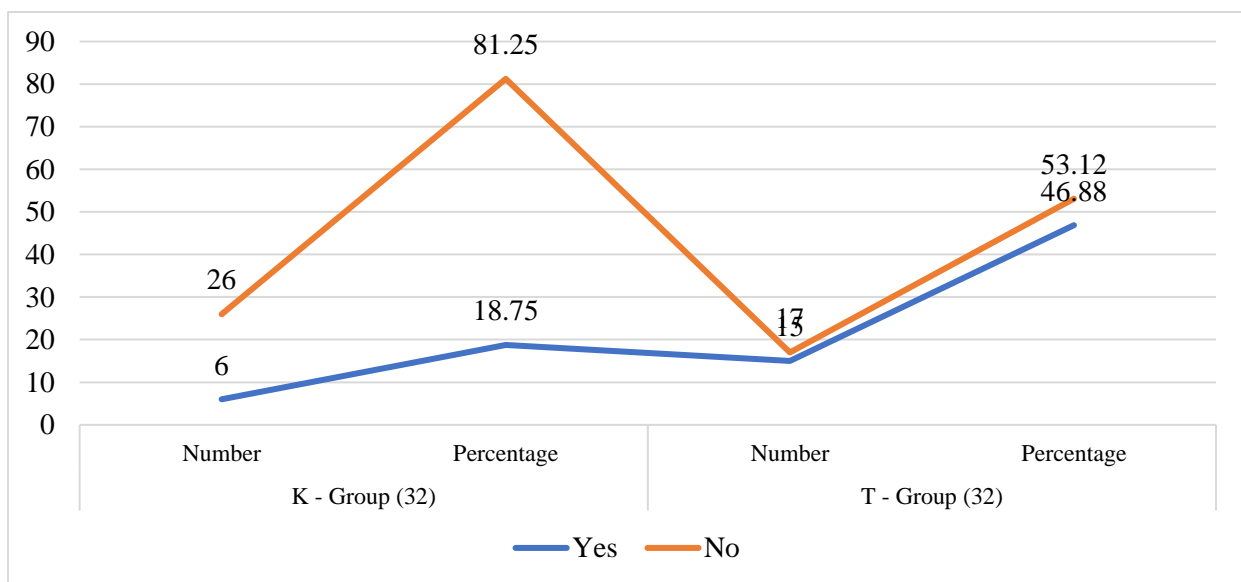
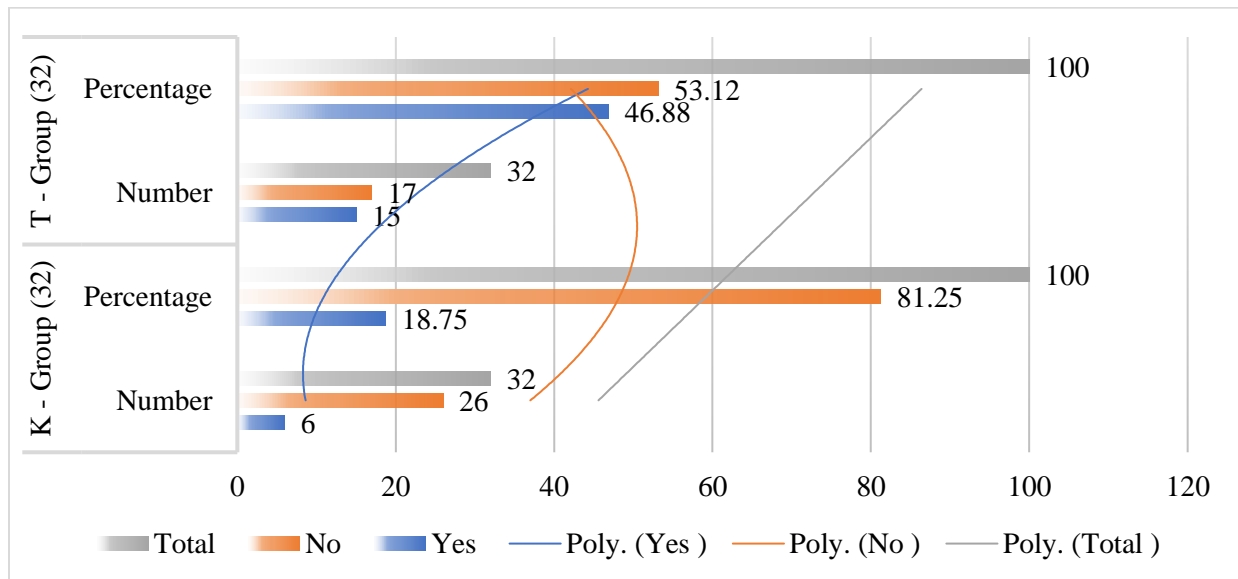
Operating room temperature was (24°C – 26°C). We maintained the position after local anaesthetic injection and assessed the degree of sensory and motor block among patients. The temperature of the Tympanic membrane was documented. Group K and T respectively received an injection of Ketamine (0.05 mg/kg) IV and Tramadol (1 mg/kg) IV. Intraoperative shivering grade (for thirty minutes) and postoperative shivering (after fifteen minutes) was observed and documented with the help of Mahajan and Crossley scale [11].

RESULTS:

The mean age of Group – K was (28.13 ± 6.19) and mean age of Group – T was (28.41 ± 5.97) years. In terms of efficacy of both the groups the efficacy of Group – K was reported in 6 patients (18.75%); whereas, in Group – T the efficacy was reported in 15 patients (46.88%). The remaining cases without efficacy in both groups were respectively in Group – K as 26 (81.5%) and in Group – T as 17 (53.12%). P-Value was taken as (0.01) that shows a significant difference. Table – I shows the detailed group-wise outcomes about the effectiveness in number and percentage.

Table: Comparison of Efficacy in Both Groups (n=64)

Efficacy	K - Group (32)		T - Group (32)	
	Number	Percentage	Number	Percentage
Yes	6	18.75	15	46.88
No	26	81.25	17	53.12
Total	32	100	32	100



DISCUSSION:

The objective of this research was to draw a comparison between prophylactic efficacy with low dose tramadol and ketamine to prevent shivering of the patients in the course of spinal anaesthesia while experiencing abdominal surgeries. Therefore, we aimed to assess the possible effects of both the drugs in order to control the preoperative onset of shivering to educate healthcare professionals for future management of abdominal surgeries. The mean age of Group – K was (28.13 ± 6.19) and mean age of Group – T was (28.41 ± 5.97) years. In terms of efficacy of both the groups the efficacy of Group – K was reported in 6 patients (18.75%); whereas, in Group – T the

efficacy was reported in 15 patients (46.88%). The remaining cases without efficacy in both groups were respectively in Group – K as 26 (81.5%) and in Group – T as 17 (53.12%) (P-Value = 0.01).

Krishna also studied the low dose Tramadol, Ketamine and Pethidine in his series on the patients experiencing spinal anaesthesia to counter preoperative shivering. His outcomes conclude that in Tramadol the shivering was (40%); whereas, it was low in the Ketamine group (13%) with a significant P-Value of (< 0.05) [10]. These outcomes are in agreement with our research outcomes. Norouzi is of the view that Ketamine (0.25 & 0.5 mg/kg-1) is a better prophylactic drug that can

manage and prevent postanesthetic shivering among patients undergoing abdominal procedures [11]. According to Shakya, the low dose of ketamine (0.25 mg/kg-1) than ondansetron (4 mg) is more effective to counter postanesthetic shivering among patients [12]. Dal reported that Ketamine (0.5 mg/kg-1) IV is effective as pethidine (20 mg) in order to prevent post-anaesthetic preoperative shivering [13]. Kose also found the effectiveness of ketamine (0.5 & 0.75 mg/kg-1) as 25 mg of meperidine to manage postoperative shivering [14]. Ketamine is capable to prevent the onset of shivering by non-shivering thermogenesis at hypothalamus level or at beta-adrenergic action of nor-epinephrine [15].

Forgone in view, we can say that "Prophylactic intravenous low dose 0.5 mg/kg ketamine administration lowers the perioperative shivering in a better way than 1 mg/kg of Tramadol in the course of spinal anaesthesia which is same as reported in the abovementioned research studies and this particular research. Few pieces of evidence are also available against the use of ketamine to manage shivering due to the employment of regional anaesthesia probably due to its unwanted side effects such as increased sedation, vomiting, nausea and hallucination. Finally, prophylactic low dose administration of Tramadol (1mg/kg) and ketamine (0.25 mg/kg-1) in the course of spinal anaesthesia are comparable as both contain an anti-shivering tendency and effect. Whereas, ketamine group produced better outcomes than Tramadol group.

CONCLUSION:

Outcomes suggest that while making a comparison of both the groups about the effectiveness of prophylactic low dose tramadol with ketamine with tramadol to prevent shivering of the patients in the course of spinal anaesthesia while experiencing abdominal surgeries; tramadol is less effective than Ketamine. The effectiveness of Ketamine is superior to manage an onset of shivering among patients.

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