ORIGINAL RESEARCH PAPER

Anaesthesiology

KEY WORDS:

Fast tracking in cardiac valve replacement surgical patients. - Comparative study of efficacy of inj.Nalbuphine and inj.Tramadol .

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INTRODUCTION-

' **Fast tracking and analgesia are two sides of the same coin** .'

Postoperative pain is often inadequately treated leading to a number of complications. Valvular heart diseases like mitral stenosis,MR,AS,AR,all have many structural effect in heart,lung as well as peripheral vasculature. Immediate after the surgery of valve replacement: though valve has been replaced,disease takes time to return to normal. They may have stormy immediate postoperative period secondary to their pulmonary hypertension and LV fuctional capacity. Fast tracking and ERAS –early recovery from anaesthesia and surgery depend on analgesia , haemodynamic stability and patient'well being with no side effects.

Our aim of this study was to compare the post-operative analgesic efficacy and potential for fast tracking of inj.Nalbuphine and inj.Tramadol.

Objectives of our study-

To compare analgesic efficacy of I.V. Tramadol and I.V. Nalbuphine in patient controlled analgesia, in terms of:

1.Pain score[VAS]

2. Changes in hemodynamic parameters

3. Adverse effects like nausea vomiting,respiratory depression.

METHODS-

Design- This study was conducted at Mahatma Gandhi Memorial College And Hospital (Aurangabad ,Maharashtra) with the permission of ethical committee of the hospital after written informed consent of 40 adult patients of either sex and ASA grade 3.

Patients were posted for elective valvular replacement surgeries. [Mitral valve or Aortic valve]

Patients divided into two groups

Group1-Nalbuphine

Group2-Tramadol.

Informed consent taken from each patient .

Patient induced with inj. midazolam (0.05 mg/kg), inj.fentanyl5 microgram/kg, and propofol [1mg/kg.]

Suxamethonium chloride (2.0 mg/kg) used to facilitate endotracheal intubation. Maintainance of anesthesia accomplished with low-flow oxygen (0.5–1.0 L/min) plus 0.7–1.5%sevofluranne In addition, vecuronium(0.1 mg/kg as a bolus dose) administered and repeated at 0.1 mg/kg to facilitate artificial ventilation.The parameters monitored during the procedure included rotine protocolled cardiac surgery monitoring[ECG, invasive arterial.central venous pressure,etco2..temperature, pulse oximetry.

Study drug inj.nalbuphine (0.2 mg/kg) or inj.tramadol (2 mg/kg) given to patients just before coming off cardiopulmonary bypass. Patients will be assessed with respect to postoperative pain intensity using the VAS Scale immediate after extubation [0 min],30 min. and 1 hr.we monitored the time required to extubate the patient in each group.

We also monitored the time interval of first pain complaint from the time of study drug administered. inj.paracetamol 15 mg/kg is used as rescue drug .we monitored VAS score after rescue drug. We repeated inj.paracetamol within four hrs if persistant complaint of pain.We monitored the no.of rescue drug doses required in each group.we monitored incidence of nausea and vomiting in each group. Post extubation we monitored Respiratory rate ,Spo2,ABG to asses sedation and drowsiness.

Patients were monitored continuously for any side effect after administration of drug.

EXCLUSION CRITERIA-

Emergency surgery Females who are known to be pregnant and lactating mothers Patients with personality disorder Patients with renal and liver disorders

INCLUSION CRITERIA:

American Society of Anesthesiologists (ASA) physical status III who are to undergo elective cardiac valvular heart surgery .

Patients between the ages of 18 and 65 yrs.

RANDOMISATION TECHNIQUES–Single centre double blind prospective randomised study

STUDY DESIGN-

Statistical analysis -Quantitative data is expressed in form of Mean and standard deviation. Comparison between two groups was done with help of unpaired t-test .qualitative is expressed in form

of percentage and chi-squared test is used for comparison between two group. All statistical analysis is done by using Ms Excel and Minitab There is no statistically significant difference between age,pulse, pre-op HR and cpb on time in two group Average SBP in group 2 is higher (129.8) than group 1(119.8) but result is not statistically significant

Average DBP in group 2 is higher (78.3) than group 1(66.8) and result is statistically high significant

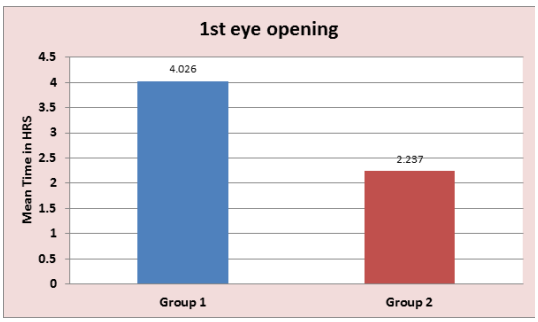
Result-

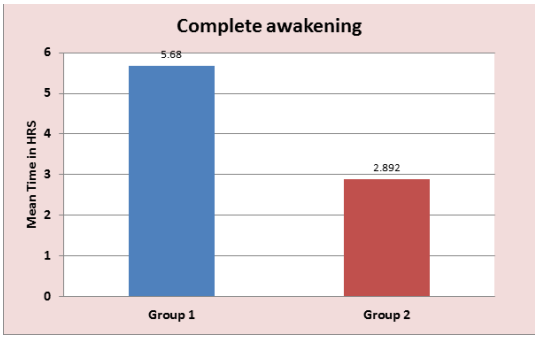
Table 1: Comparison between two group

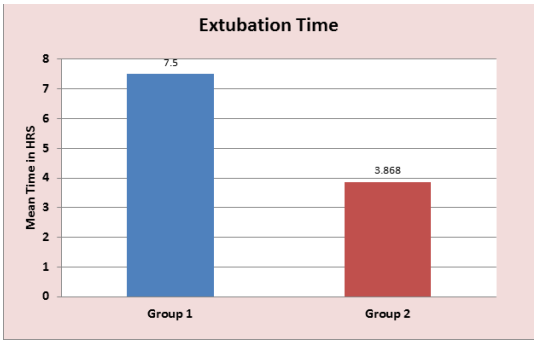
Parameter	Group 1 Mean±SD	Group 2 Mean±SD	t-value	p-Value
Age	38.4±14.3	40.4±16.3	-0.41	0.682 NS
Pulse	92.1±21.0	91.5±23.6	0.08	0.933 NS
Per-OP HR	91.0±17.7	90.3±21.4	0.11	0.911 NS
SYSTOLIC BP	119.8±16.9	129.8±23.5	-1.55	0.130 NS
DIASTOLIC BP	66.8±13.6	78.3±10.5	-3.02	0.005 HS
cpb on time	7.16±5.04	7.00±4.28	0.10	0.918 NS
CPBTIME	51.8±15.5	58.0±13.4	-1.35	0.184 NS
HR	92.5±22.0	87.8±22.2	0.67	0.505 NS
SYSTOLIC BP	118.6±14.9	113.4±18.0	0.94	0.356 NS
DIASTOLIC BP	62.65±8.19	68.65±8.34	-2.20	0.035 S
Patient shifted to ICU(Min.)	64.7±19.3	60.8±15.2	0.70	0.489 NS
1st eye opening (Hr)	4.026±0.964	2.237±0.348	7.61	0.000 HS
Complete awakening (Hr)	5.68±1.18	2.892±0.397	9.77	0.000 HS
Extubation Time (Hr)	7.50± 1.41	3.868± 0.436	10.70	0.000HS
vas score 1	0.278±0.461	1.105±0.567	-4.88	0.000 HS
vas score 2	0.684±0.671	2.79±1.13	-6.96	0.000 HS
vas score 3	1.158±0.501	2.895±0.994	-6.80	0.000 HS
1st Complain of pain[hrs]	6.316±0.582	3.368±0.597	15.40	0.000 HS

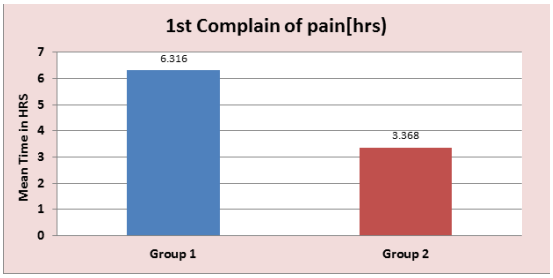
P>0.05 – Non Significant (NS)
P<0.05 –Significant(S)
P<0.01 –High Significant (HS)

First eye opening, complete awakening and extubation time is better and early in group 2 - inj. Tramadol group than group 1 –Inj.Nalbuphine group.Analgesia after extubation is better in group 1-inj.nalbuphine than inj.Tramadol group.









DISCUSSION-

Valvular heart diseases like mitral stenosis,Mitral regurgitation, Aortic stenosis and Aortic Regurgitation ,all have many structural effects in heart as well as pulmonary vasculature.These patients have increase pulmonary artery pressures.

Post-op recovery depends upon successful surgry,myocardial protection and post-op analgesia,LV function,respiratory compliance. Pain can stimulate pulmonary artery hypertension crisis and can lead to devastating complications. The effective relief of pain is of paramount importance to any patients undergoing surgery for smoother postoperative course with earlier discharge from hospital, but also reduce the onset of chronic pain syndromes.

Here we compared recovery after administration of above said drug in view of analgesia[VAS score],compliance of lung function [clinical-respiratory rate,spirometry ,spo2,ability to cough] and LV function, general symptoms like well being, nausea, vomiting and discharge from ICU.

Nalbuphine appears to be a safe and effective analgesic for the relief of moderate to severe postoperative pain than tramadol in equianalgesic doses with minimum circulatory effects, providing good sedation and significantly lower incidence of nausea and vomiting. Its use in the postoperative period can also attenuate the mu-opioid receptor related adverse events, a ceiling respiratory depression.Fast tracking is extubation within 6 hrs post cardiac surgery. Tramadol is favourable drug for fast tracking than Nalbuphine group,though the patient satisfaction regarding pain is more in Nalbuphine group.Nalbuphine can be given by various routes like subcutaneous,intramuscular and intravenous[4].For postoperative pain intravenous route is considered more preferable. [5]. Nalbuphine does not require any opioid license and can be given as a single analgesic agent during general anaesthesia.

Tramadol which is commonly used for post operative analgesia is a centrally acting analgesic agent[6].However in comparison to morphine it has 10% potency when given parenterally.Tramadol inhibits neuronal uptake of noradrenaline and serotonin and it also acts on opioid receptors.Compared to other opioids it has lesser risk of depressing respiratory system[7].

Tramadol's common side effect is nausea and vomiting in post operative patients[8]. Nalbufine has shown greater sedation than tramadol in our study as well as in many studies too[9]. In terms of haemodyanamic stability nalbuphine is better than morphine[10]. Tramadol group required lesser amount of rescue analgesia during initial 12 hours after surgery as compared to nalbufine group in

obstetrical laparotomies but was exactly opposite in orthopaedic cases[11],and in our study nalbuphine group required less rescue analgesic drug.

CONCLUSION-

Nalbuphine appears to be better analgesic than tramadol for the relief of moderate to severe postoperative pain in post valve replacement surgical patients. It provides good sedation, hemodynamic stability .We conclude that tramadol is a better drug for fast tracking than nalbuphine in view of time taken for extubation but at the same time nalbuphine though takes more extubation time is an excellent analgesic.

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