Original Research Article

A comparative study of midazolam plus fentanyl versus midazolam plus propofol with respect to hemodynamic stability during regional anaesthesia

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Abstract

Background: Patient safety has always been a major concern for the physicians of both ancient and modern eras. **Aims and Objectives:** To study Midazolam plus Fentanyl versus Midazolam plus Propofol with respect to Hemodynamic stability during regional Anaesthesia. **Methodology:** We conducted a comparative study of conscious sedation using midazolam with fentanyl in group-I vs. midazolam with propofol in group-II. In the department of anesthesia at Government Medical College, Latur. In the period between January 2016 to December 2016. 60 patients of ASA Grade I,II,and III, were randomly divided in two groups, 30 in each group, of between 15 to 60 years**. Results:** Systolic blood pressure changes in both the groups are comparable with each other at 30 minutes after sedation, but blood pressure fall was more in group II from the base line. Heart rate changes in both the groups applying test of significant changes in heart rate seen after sedation in group-I (Midazolam+Fentanyl) compare to group II (Midazolam+ propofol). Statistically $p<0.001$ is highly significant in both groups. **Conclusion:** It can be concluded from our study that Systolic blood pressure changes in both the groups are comparable with each other at 30 minutes after sedation, but blood pressure fall was more in Midazolam plus Propofol group from the base line also in heart rate was more .
Key Word: Midazolam plus Fentanyl, Midazolam plus Propofol, Hemodynamic stability.

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INTRODUCTION

Patient safety has always been a major concern for the physicians of both ancient and modern eras.[1] Propofol is a widely administered hypnotic agent that is of unique advantages yet some disadvantages.[2-4] Induction of anesthesia with propofol is associated with significant blood pressure reduction and hemodynamic instability especially in patients over 50 years old. In patients with previous hypotension and those with American society of anesthesiologists' physical status (ASAPS)>II, this drop is more dramatic.[3,5] Regional anesthesia Is becoming an increasing important aspect of anesthesia practice. Its advantage include avoidance of certain risk with general anesthesia those of pulmonary aspiration and airway obstructions, laryngospasm. Avoidance of operation theatre pollution, provision of good postoperative analgesia. Benefits in certain pre-existing pulmonary embolism postoperatively[6,7,8,9,10]. Midazolam is used for conscious sedation for short diagnostic or endoscopic and dental procedure, adjunt to local or regional anesthesia[10]. Propofol is a sedative hypnotic drug, which is becoming popular for sedation during our patients procedures performed under local anesthesia. Its high clearance and favorable recovery profile offers advantages over other intravenous sedative and analgesic drugs. Sedation with propofol can be adjusted with manual intermittent bolus

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injections techniques[11,12]. Fentanyl: Fentanyl is a potent synthetic opiate agonist, estimated to be 25 fold to 100 fold more potent than morphine. It is highly lipid soluble and enters the central nervous system swiftly. Leading to rapid onset of action. Fentanyl provides relief of moderate to severe pain and has become the narcotic drug of choice for a wide variety of painful procedures. It has relatively short duration of action. These qualities make it ideal for the expeditious completion of painful procedures in the emergency department setting[13,14].

MATERIAL AND METHODS

We conducted a comparative study of conscious sedation using midazolam with fentanyl in group-I vs. midazolam with propofol in group-II. In the department of anesthesia at Government Medical College, Latur. In the period between January 2016 to December 2016. 60 patients of ASA Grade I, II, and III, were randomly divided in two groups, 30 in each group, of between 15 to 60 years of either sex undergoing any surgery under regional anesthesia (spinal, epidural anesthesia or peripheral nerve blocks, Routine of emergency surgery were included into study while the patients with History of allergic reaction to the study medication, Chronic opioid or sedative drug use, Obesity(>130% for ideal body weight), Clinically significant cardiac, pulmonary, hepatic or renal dysfunction were excluded from the study.

Table 1: Sedation score is as follows

Sr. No	Parametere	Score
A	Fully awake and anxious	1
B	Drowsy or awake and comfortable	2
C	Eyes closed but responds to verbal commands	3
D	Eyes closed but responds to light physical stimulation.	4
E	Unresponsive to light physical simulation.	5

Patients were specifically asked awareness during the surgical procedure and whether they will be happy to have same anesthetic technique again. The hemodynamic parameters like Blood pressure, systolic Diastolic and Heart Rate etc. were recorded. The statistical analysis done by unpaired t-test, calculated by SPSS 19 software.

RESULT

Table 2A: Hemodynamic changes

Characteristics	Group I	Group II	Group I/II	Group I/II	Remarks
Duration in minutes after starting the drip	Midazolam + fentanyl	Midazolam + Propofol	'T' values (test of Sig.)	P Value	
	Systolic Blood pressure				
Preop SBP	121.9±12.34	129±16.6	1.978	NS	NS
SBP (10 min)	108.466±9.608	118±14.5	2.99	P=0.01	SS
SBP (20 min)	100.66±7.849	108.1±9.819	3.224	P<0.001	HS
SBP (30 min)	97±6.533	98.26±5.085	0.838	P<0.001	HS

Group I:-Midazolam+Fentanyl, Group II:- Midazolam +propofol. Table 2a and chart 1 shows hemodynamic changes of both the groups applying test of significance(t). Systolic blood pressure changes in both the groups are comparable with each other at 30 minutes after sedation, but blood pressure fall was more in group II from the base line.

Table 2B: Hemodynamic changes

Characteristics	Group I	Group II	Group I/II	Group I/II	Remarks
Duration in minutes after starting the drip.	Fentanyl	propofol	'T' values (Test of sig)	P values	
	Heart Rate Changes				
Preop HR	87.73±6.164	85.7±10	0.962	NS	NS
HR (10 Min)	78±5.632	83.5±8.665	2.91	P<0.01	SS
HR (20 min)	71±5.06	79.5±7.62	5.11	P<0.001	HS
HR (30 Min)	68.67±5.287	75.67±6.583	4.54	P<0.001	HS

Table 2b and chart II shows heart rate changes in both the groups applying test of significant changes in heart rate seen after sedation in group-I (Midazolam+Fentanyl) compare to group II (Midazolam+ propofol). Statistically p<0.001 is highly significant in both groups

DISCUSSION

Propofol produces decrease in systemic blood pressure that is greaterthan those evoked by comparable dose of thiopental. These decreasesin blood pressure are often accompanied by corresponding changes incardiac output and systemic vascular resistance. The relaxation of vascular smooth muscles produced by propofol is primarity due toinhibition of propofol may result from a decrease in intracellularcalcium influx. Stimulation produced by direct laryngoscopy andintubations of the trachea reverse the blood pressure effect of propofol, although the drug is more effective than thiopental inblunting the magnitude of this pressure response. Propofol also effective blunts the hypertensive response to placement of laryngealmask airway. The blood pressure effect of propofol may be exaggeratedin hypovolemic patients, elderly patients, and patients with compromised left ventricular function due to coronary artery disease. Adequate hydration before rapid IV administration of propofol is recommended to minimize the blood pressure effect of this drug. Addition of nitrous oxide dose not alters the cardiovascular effects of propofol. Despite decreased in systemic blood pressure, heart rate often remains unchanged. Bradycardia and asystole have been observed after induction of anesthesia with propofol, resulting in the occasional recommendation that anticholinergic drugs be administered when vagal simulation is likely to occur in association with administration of propofol. Fentanyl even in large doses 50ug/kg IV. Does not evoke the release of histamine. As a results, dilatation of venous capacitance vessels leading to hypo tension is unlikely. Carotid sinus baroeceptor reflex control of heart rate is markedly depressed by fentanyl. 10 ugm/kg IV, administered to neonates. Bradycardia is more prominent with fentanyl than morphine and may lead to occasional decreases in blood pressure and cardiac output. Sedation was achieved after the bolus doses and that remained through out the procedure in both the groups. In propofol group patients sedated immediately after bolus without hypotension or bradycardia. But in fentanyl group 9 to 10 min. were required to achieve the adequate sedation. 5 patients from fentanyl group had bradycardia and 2 patients had hypotension, so we reduced the doses by adjusting the microdrip and administering IV fluids and atropine. And further fall in blood pressure and heart rate was avoided. In our study we found that Systolic blood pressure changes in both the groups are comparable with each other at 30 minutes after sedation, but blood pressure fall was more in group II from the base line. Heart rate changes in both the groups applying test of significant changes in heart rate seen after sedation in group-I (Midazolam+Fentanyl) compare to group II (Midazolam+ propofol). Statistically $p<0.001$ is highly significant in both groups.

CONCLUSION

It can be concluded from our study that Systolic blood pressure changes in both the groups are comparable with each other at 30 minutes after sedation, but blood pressure fall was more in Midazolam plus Propofol group from the base line also in heart rate was more .

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