

To Assess Intraoperative requirement of Opiod Analgesia at MGM Medical College, Indore

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Article History

Received: 11.04.2018

Accepted: 20.04.2018

Published: 30.04.2018

DOI:

10.36348/sjm.2018.v03i04.014



Abstract: The increasing number of opioid users among chronic pain patients, and opioid abusers among the general population, makes perioperative pain management challenging for health care professionals. Anesthesiologists, surgeons, and nurses should be familiar with some pharmacological phenomena which are typical of opioid users and abusers, such as tolerance, physical dependence, hyperalgesia, and addiction. Further clonidine also reduces intraoperative requirement of opioid analgesics as compared to normal saline group. Total amount of rescue analgesia needed in 24 hour was also significantly less in clonidine group as compared to placebo group. Intraoperatively more fentanyl required in placebo group as compared to clonidine group ($p < 0.05$).

Keywords: Intraoperative, Opiod & Analgesia.

INTRODUCTION

Analgesia is an integral part of balanced anesthesia. Pain is one of the primary concerns of surgeons during spine surgeries because it influences the clinical outcome and patient well-being in the postoperative period [1]. Studies with single analgesics (opioid) have not been able to provide effective pain relief perioperatively without adverse effects [2].

MATERIALS & METHODS

The study entitled "To assess intraoperative requirement of opioid analgesia" was conducted on patients admitted at MGM Medical College, Indore (M.P.)

STUDY DESIGN

A prospective, randomized comparative study.

STUDY POPULATION

All patients admitted in MGM Medical College, Indore (M.P.) and posted for elective abdominal surgeries under general anesthesia during the study period.

GROUPING

90 Patients were divided into two groups.

1. **Group C (Clonidine group, n=45):** Patients were randomly assigned in a double-blind fashion to one of the two study group. In the clonidine group (Group C, $n=45$), patients received IV clonidine 3 mcg/kg diluted with 100 mL normal saline and infused with a syringe pump over 30 min after receiving the patient in the operation theatre lounge.
2. **The placebo group (Group P, n=45):** patients received a corresponding volume of 0.9% saline. The anaesthesia resident (who was not one of the

observers for the study) performed permuted block randomization and blinding of the study medication. Scores for sedation and haemodynamic parameters (SBP, DBP, MAP) and heart rate (HR) and peripheral oxygen saturation were recorded by an anaesthetist who was blinded to the patient group, at times 0, 15 and 30 min during infusion of the study drugs.

Inclusion criteria

- ASA grade I and II patients of both genders.
- Age: 18 to 60 years.
- Patients and/or his/her legally acceptable representative willing to provide their voluntary written informed consent form for participation in the study.

Exclusion criteria

- History of recent Myocardial Infarction.
- Patients with uncontrolled hypertension and diabetes mellitus 1 & II
- Patients with hepatic or renal disease.
- Allergies to drugs used.

- Lactating mothers.
- Patients taking Methyl- Dopa, Beta Blockers, Benzodiazepines.
- Patients and/or his/her legally acceptable representative not willing to provide their voluntary written informed consent form for participation in the study.

STATISTICAL ANALYSIS

The data was initially entered into the Microsoft excel from the customized proforma. Then it was transferred to the IBM SPSS Version 20.0.0 for statistical analysis. The mean of the variables between the two groups were compared using Unpaired 't' test and within the groups means were compared using Paired 't' test. A "p" value of < 0.05 was taken as statistically significant. The final data was presented in the form of tables and graphs.

OBSERVATION & RESULTS

Table-1: Comparison of intraoperative adverse events between the two groups (N=90)

Intraoperative Complications	Clonidine Group		Normal Saline Group		“P” value
	No.	%	No.	%	
Bradycardia	4	8.9	0	0.0	0.036
Hypotension	3	6.7	0	0.0	0.073

The above table shows the comparison of intraoperative complications between the two groups.

There was statistically significant association seen for bradycardia between two groups (P<0.05),

showing that intraoperative bradycardia was more common in clonidine group as compared to normal saline group. Hypotension was also more in clonidine group as compared to normal saline group, but was statistically insignificant.

Table-2: Comparison of postoperative complications between the two groups (N=90)

Postoperative Complications	Clonidine Group		Normal Saline Group		“p” value
	No.	%	No.	%	
None	36	80	25	55.6	0.023
Nausea, vomiting	3	6.7	6	13.3	0.485
Shivering	3	6.7	14	31.1	0.006
Bradycardia	1	2.22	0	0	0.312
Hypotension	2	4.44	0	0	0.494
Resp. depression	0	0	0	0	0
Total	45	100.0	45	100.0	

The above table shows the association between the postoperative complications and the groups.

There was a statistically significant association seen between postoperative complications and the groups (P<0.05), showing a higher postoperative complications in the normal saline group in comparison to the clonidine group. It shows nausea, vomiting is more in placebo group as

compared to clonidine group, but it was statistically insignificant.

Shivering is also more in placebo group as compared to clonidine group and it was statistically significant. One patient was having bradycardia and two patients was having hypotension in clonidine group during 24 hr as compared to placebo group and both were statistically insignificant none of either group patient developed respiratory depression in postoperative period.

Table-3: Comparison of mean rescue analgesia between the two groups postoperatively (N=90)

Parameter	Clonidine Group (n=45) [Mean ± SD]	Normal Saline Group (n=45) [Mean ± SD]	‘t’ Value	P Value
Rescue analgesia	61.73 ± 52.17	95.82 ± 66.06	-2.717, df=88	0.008*

Unpaired „t” test applied. P value = 0.008*, significant

The above table shows the mean rescue analgesia requirement comparison between the clonidine and normal saline group.

The rescue analgesia requirement in clonidine group was 61.73 ± 52.17 , while in the normal saline group it was 95.82 ± 66.06 . The difference was found to be statistically significant ($P < 0.05$), showing a higher mean rescue analgesia in the normal saline group in comparison to the clonidine group.

DISCUSSION

Clonidine produce dose dependent analgesia and adverse effect on parenteral administration. In a dose response study Marinangeli and Colleagues *et al.*, [6] studied that 3 mcg/kg as loading dose followed by 0.3mcg/kg/hr is optimal dose for postoperative analgesia dose was more effective than clonidine 2mcg/kg for postoperative pain relief after hemilaminectomy, while clonidine 5mcg/kg resulted in similar analgesia with significant side-effects.

Postoperative pain measurement

In our study assessment of postoperative analgesia was done by visual analogue scale. This is simple and reliable method for assessment of pain. Most of the authors, works on pain have employed this and advocated its use, because of its simplicity.

As we found in our study VAS score was significantly low as compare to placebo group upto 12 hr (p value < 0.05). There after VAS score was comparable in both the group upto 24 hour. In our study Postoperative rescue analgesia and number of patient requiring rescue analgesia was found to be significantly less in clonidine (61.73 ± 52.17 mg) group as compared to placebo group (95.82 ± 66.06 mg). This could be due to long elimination half-life of clonidine [5] and opioid sparing effect [10]. So it also decreases postoperative rescue analgesic requirement [3]. This could be explained by synergetic analgesic action between opioid and alpha-2 adrenergic agonist.

Our study is supported by N Bharti *et al.*, [8], who got similar result for VAS score upto 12hr postoperatively and significant reduced opioid requirement post operatively 24hr in open cholecystectomy. Samantaray *et al.*, [7] also found similar result for VAS score for 12hr and reduced rescue analgesic requirement post operatively during their study. Z M Naja *et al.*, [9], who used lower dose of iv clonidine for postoperative analgesia in laparoscopic abdominal surgeries, also found significant low VAS score postoperatively upto 12 hr, with reduced opioid requirement postoperatively in clonidine group. Franco marinangeli *et al.*, [2] also found effective postoperative

analgesia and reduced VAS score postoperatively in intravenous clonidine group, which is also similar to our study. De cock *et al.*, [4] studied intravenous clonidine for postoperative analgesia in major abdominal surgeries and significant postoperative analgesia and reduced opioid requirement which is again similar to our study

CONCLUSION

Further clonidine also reduces intraoperative requirement of opioid analgesics as compared to normal saline group. Total amount of rescue analgesia needed in 24 hour was also significantly less in clonidine group as compared to placebo group. Intraoperatively more fentanyl required in placebo group as compared to clonidine group ($p < 0.05$).

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