

ORIGINAL ARTICLE

A comparison of Gabapentin and melatonin for cataract surgery

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ABSTRACT:

Background: Preparing patients to maintain composure during retrobulbar injection and surgery is the main objective of sedation for eye surgery. The present study was conducted to compare gabapentin and melatonin on anxiety and pain associated with retrobulbar eye block for cataract surgery. **Materials & Methods:** 110 patients scheduled for cataract surgery by phacoemulsification of both genders were divided into 2 groups. Each group comprised of 55 patients. Group I patients received 600 mg gabapentin and group II patients received 6 mg melatonin. Anxiety and pain scores in each patient before premedication (T1), 90 min after premedication, on arrival in the operating room (T2), during retrobulbar block (RBB) placement (T3), during operation period (T4), and postoperatively prior to discharge from the recovery room (T5) were recorded. Intraoperative fentanyl consumption, duration of surgery, and operating condition scores were also compared. **Results:** The mean duration of surgery in group I was 21.5 minutes and in group II was 20.6 minutes. Intraoperative fentanyl consumption was seen in 9 each in both groups. The operating condition scores was good seen in 30 in group I and 31 in group II, moderate 25 in group I and 23 in group II and poor in 1 in group II. The difference was non-significant ($P > 0.05$). Verbal anxiety scores at T1 was 3.6 in group I and 3.5 in group II, at T2 was 3.1 in group I and 3.2 in group II, at T3 was 2.5 in group I and 2.9 in group II, at T4 was 1.4 in group I and 1.8 in group II. The intragroup difference was significant ($P < 0.05$). The mean verbal pain scores in group I and group II, at T1 was 5.7 and 5.6, at T2 was 4.6 and 4.9, at T3 was 3.2 and 3.7, at T4 was 2.1 and 2.9 and at T5 was 0 and 1.1 respectively. The intragroup difference was significant ($P < 0.05$). **Conclusion:** Pretreatment with gabapentin and melatonin reduces anxiety in a comparable manner. Additionally, a single oral dosage of gabapentin given before to surgery reduces pain and is linked to higher sedation scores during the retrobulbar block.

Keywords: cataract surgery, Gabapentin, melatonin

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INTRODUCTION

Preparing patients to maintain composure during retrobulbar injection and surgery is the main objective of sedation for eye surgery. Both shallow and profound sedation can cause patients to move suddenly, which could cause dangerous problems during open eye surgery. Patients receiving local anesthetic and sedation for cataract surgery have been shown to have cognitive impairment, which might cause serious issues after the patient is discharged.¹ A retrobulbar eye block is a type of regional anesthesia commonly used in ophthalmic surgery to provide anesthesia and akinesia (lack of movement) of the eye and surrounding structures. It involves injecting a local anesthetic agent into the retrobulbar space, which is the area behind the globe of the eye and in front of the optic nerve.²

Several medications, including dexmedetomidine, benzodiazepines, propofol, and opioids, have been used to sedate patients during this process. All of these medications have drawbacks, though, which can make patients less cooperative during surgery and less than optimal for intraoperative sedation control.³ Thus, a careful assessment of the possible clinical benefits of recently approved therapeutic medications is necessary. Two well-tolerated medications with anxiolytic and antinociceptive effects are gabapentin and melatonin.⁴ According to a number of studies,

melatonin used as preoperative premedication causes drowsiness and preoperative anxiolysis without impairing cognitive function, memory recall, driving ability, or recovery quality.^{5,6} The present study was conducted to compare gabapentin and melatonin on anxiety and pain associated with retrobulbar eye block for cataract surgery.

MATERIALS & METHODS

The present study consisted of 110 patients scheduled for cataract surgery by phacoemulsification of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. Each group comprised of 55 patients. Group I patients received 600 mg gabapentin and group II patients received 6 mg melatonin. Anxiety and pain scores in each patient before premedication (T1), 90 min after premedication, on arrival in the operating room (T2), during retrobulbar block (RBB) placement (T3), during operation period (T4), and postoperatively prior to discharge from the recovery room (T5) were recorded. Intraoperative fentanyl consumption, duration of surgery, and operating condition scores were also compared. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Assessment of parameters

Parameters	Group I	Group II	P value
Duration of surgery (min)	21.5	20.6	0.19
intraoperative fentanyl consumption	9	9	1
operating condition scores			
Good	30	31	0.95
Moderate	25	23	
Poor	0	1	

Table I shows that the mean duration of surgery in group I was 21.5 minutes and in group II was 20.6 minutes. Intraoperative fentanyl consumption was seen in 9 each in both groups. operating condition scores was good seen in 30 in group I and 31 in group II, moderate 25 in group I and 23 in group II and poor in 1 in group II. The difference was non-significant ($P > 0.05$).

Table II Comparison of verbal anxiety scores (VAS) in both groups

Verbal anxiety scores	Group I	Group II	P value
T1	3.6	3.5	0.71
T2	3.1	3.2	
T3	2.5	2.9	
T4	1.4	1.8	
T5	0	0	
P value	0.02	0.04	

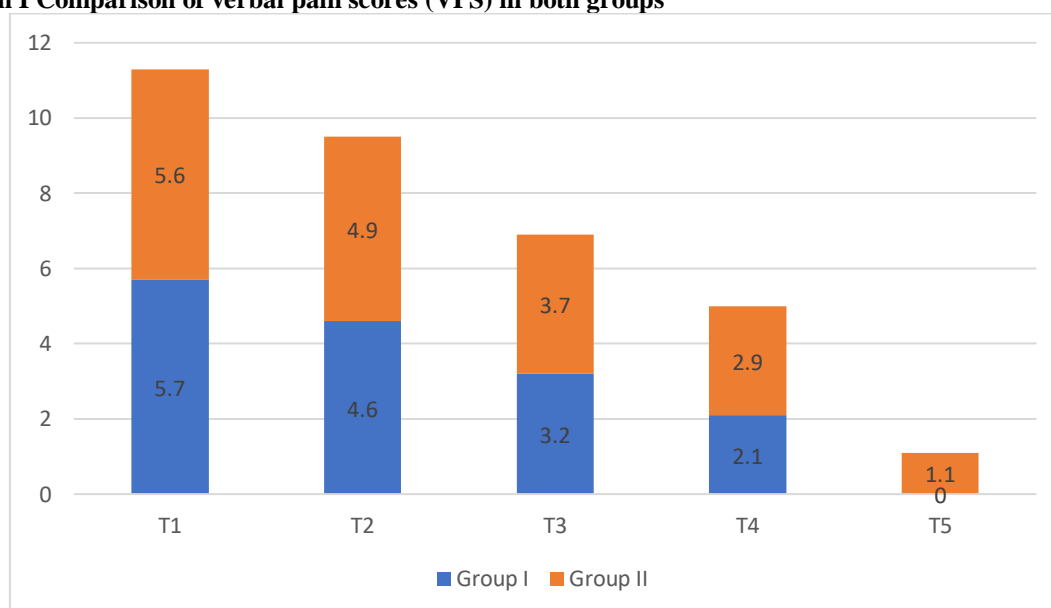
Table II shows that verbal anxiety scores at T1 was 3.6 in group I and 3.5 in group II, at T2 was 3.1 in group I and 3.2 in group II, at T3 was 2.5 in group I and 2.9 in group II, at T4 was 1.4 in group I and 1.8 in group II. The intragroup difference was significant ($P < 0.05$).

Table III Comparison of verbal pain scores (VPS) in both groups

Verbal pain scores	Group I	Group II	P value
T1	5.7	5.6	0.14
T2	4.6	4.9	
T3	3.2	3.7	
T4	2.1	2.9	
T5	0	1.1	
P value	0.01	0.03	

Table III, graph I shows that mean verbal pain scores in group I and group II, at T1 was 5.7 and 5.6, at T2 was 4.6 and 4.9, at T3 was 3.2 and 3.7, at T4 was 2.1 and 2.9 and at T5 was 0 and 1.1 respectively. The intragroup difference was significant ($P < 0.05$).

Graph I Comparison of verbal pain scores (VPS) in both groups



DISCUSSION

Retrobulbar eye blocks are generally safe and effective when performed by experienced healthcare professionals.⁸ However, like any medical procedure, there are potential risks and complications, including globe perforation, retrobulbar hemorrhage, and injury to surrounding structures.⁹ Gabapentin, a medication primarily used to treat seizures and nerve pain, is sometimes used in cataract surgery for its potential benefits in managing post-operative pain and reducing the need for opioid pain medications.¹⁰ The present study was conducted to compare gabapentin and melatonin on anxiety and pain associated with retrobulbar eye block for cataract surgery.

We found that the mean duration of surgery in group I was 21.5 minutes and in group II was 20.6 minutes. Intraoperative fentanyl consumption was seen in 9 each in both groups. operating condition scores was good seen in 30 in group I and 31 in group II, moderate 25 in group I and 23 in group II and poor in 1 in group II. Khezri et al¹¹ examined the effects of gabapentin and melatonin on patient satisfaction with the surgeon, anxiety, discomfort, and levels of sedation during cataract surgery. Ninety minutes prior to entering the operating room, 136 patients, ages 35 to 85, who were scheduled for cataract surgery, were randomly assigned to one of three study groups and given either melatonin (6 mg), gabapentin (600 mg), or a placebo. Scores for sedation, pain, and anxiety throughout the block and procedure were evaluated, along with the surgeon's level of satisfaction. After taking premedication and continuing throughout the early postoperative phase, anxiety levels dramatically dropped in the melatonin and gabapentin groups when compared to the placebo group. At any point throughout the test, there was no statistically significant difference in the anxiety levels between the melatonin and gabapentin groups. There were notable variations. The pain scores of the gabapentin versus placebo and melatonin groups during retrobulbar implantation showed significant differences. Additionally, there were noteworthy distinctions between the gabapentin and placebo groups' sedation levels following retrobulbar implantation. During retrobulbar implantation, there was no statistically significant difference in sedation scores between the melatonin, gabapentin, and placebo groups. There was no difference in the postoperative pain scores or the intraoperative pain scores among the three groups. For each of the three research groups, the surgeon reported comparable quality operating conditions during the procedure.

We observed that verbal anxiety scores at T1 was 3.6 in group I and 3.5 in group II, at T2 was 3.1 in group I and 3.2 in group II, at T3 was 2.5 in group I and 2.9 in group II, at T4 was 1.4 in group I and 1.8 in group II. Ismail et al¹² in their study ninety minutes prior to surgery, forty patients undergoing cataract surgery under topical anesthetic were randomly randomized into two groups (20 patients each) and given an oral

premedication of either a 10 mg melatonin tablet (melatonin group) or a placebo tablet (control group). The anxiety scores (median, interquartile range) with melatonin were considerably lower than those of the placebo group ($P = 0.04$ and $P = 0.005$). The scores decreased from 5, 3.5–6 to 3, 2–3 after premedication and to 3, 2–3.5 during operation. When compared to the control group, the melatonin group had significantly lower perioperative verbal pain scores and a lower intraoperative fentanyl demand (median, interquartile range) of 0, 0–32.5 vs 47.5. The melatonin group had significantly lower perioperative verbal pain levels and required less fentanyl during surgery (median, interquartile range) than the control group (0, 0–32.5 vs. 47.5, 30–65 microg, respectively; $P = 0.007$). Additionally, following premedication, melatonin dramatically reduced IOP (mean +/- sd) from 17.9 +/- 0.9 to 14.2 +/- 1.0 mm Hg, and after surgery, it lowered to 13.8 +/- 1.1 mm Hg ($P < 0.001$). Additionally, it offered higher-quality working circumstances.

We found that mean verbal pain scores in group I and group II, at T1 was 5.7 and 5.6, at T2 was 4.6 and 4.9, at T3 was 3.2 and 3.7, at T4 was 2.1 and 2.9 and at T5 was 0 and 1.1 respectively. Yousaf et al¹³ found that 9 of the 10 studies showed statistically significant reduction of preoperative anxiety with melatonin premedication compared with placebo. An opioid-sparing effect or reduced pain scores were evident in five studies whereas three studies were contradictory. Thus, melatonin premedication is effective in ameliorating preoperative anxiety in adults, but its analgesic effects remain controversial in the perioperative period.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that pretreatment with gabapentin and melatonin reduces anxiety in a comparable manner. Additionally, a single oral dosage of gabapentin given before to surgery reduces pain and is linked to higher sedation scores during the retrobulbar block.

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