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# Original Research

## Gabapentin versus melatonin for cataract surgery- A comparative analysis

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***ABSTRACT:***
**Background:** The primary goal of sedation for eye surgery is to prepare patients to remain composed during retrobulbar injection and procedure. The present study compared gabapentin and melatonin in cataract surgery. **Materials & Methods:** 80 patients scheduled for cataract surgery by phacoemulsification of both genderswere divided into 2 groups of 40. 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. **Results:** The mean duration of surgery in group I was 23.5 minutes and in group II was 21.4 minutes. Intraoperative fentanyl consumption was seen in 10 each in both groups. Operating condition scores was good seen in 26 in group I and 27 in group II, moderate 14 in group I and 12 in group II and poor in 1 in group II. The difference was non-significant (P> 0.05). Verbal anxiety scores at T1 was 3.8 in group I and 3.6 in group II, at T2 was 3.4 in group I and 3.4in group II, at T3 was 2.2 in group I and 2.7 in group II, at T4 was 1.6 in group I and 1.9 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 5.8 and 5.7, at T2 was 4.7 and 4.8, at T3 was 3.4 and 3.5, at T4 was 2.3 and 2.9 and at T5 was 0 and 1.2 respectively. The intragroup difference was significant (P< 0.05). **Conclusion:** Melatonin and gabapentin pretreatment both lessen anxiety in a similar way. Furthermore, a single oral dosage of gabapentin before to surgery is associated with improved sedation scores during the retrobulbar block and lowers discomfort.
**Keywords:** Gabapentin, melatonin,cataract

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### INTRODUCTION

The primary goal of sedation for eye surgery is to prepare patients to remain composed during retrobulbar injection and procedure.[1] Patients who are under shallow or profound anesthesia may move erratically, which could lead to potentially harmful complications during open eye surgery.[2] It has been demonstrated that patients undergoing cataract surgery who get local anesthesia and sedation experience cognitive impairment, which could lead to major problems once they are released from the hospital. In order to deliver anesthesia and akinesia (lack of movement) of the eye and surrounding structures, ophthalmic surgeons frequently employ a type of regional anesthetic called a retrobulbar eye block. A local anesthetic is injected into the retrobulbar space, which is the region in front of the optic nerve and behind the eye's globe.[3]

Patients have been sedated during this procedure with a variety of drugs, including as opioids, benzodiazepines, propofol, and dexmedetomidine. However, many of these drugs have side effects that can make patients less cooperative during surgery and less than ideal for controlling intraoperative sedation.[4] Therefore, a thorough evaluation of the potential clinical advantages of freshly licensed therapeutic drugs is required.[5] Melatonin and gabapentin are two well-tolerated drugs that have antinociceptive and anxiolytic properties. According to several studies, melatonin administered as a preoperative drug induces drowsiness and preoperative anxiety without affecting memory recall, cognitive function, driving ability, or

the quality of recovery.[6]The present study compared gabapentin and melatonin in cataract surgery.

## MATERIALS & METHODS

The present study comprised of 80 patients scheduled for cataract surgery by phacoemulsification of both genders. All patients gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 40 each. Patients in groups I and II were given 600 mg of gabapentin and 6 mg of melatonin, respectively. Before premedication (T1), 90 minutes after premedication, upon arrival in the operating room (T2), during the insertion of the retrobulbar block (RBB) (T3), throughout the operation time (T4), and postoperatively before being released from the recovery room (T5), anxiety and pain levels were recorded for each patient. Additionally compared were operating condition scores, length of surgery, and intraoperative fentanyl usage. 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) | | 23.5 | 21.4 | 0.82 |
| intraoperative fentanyl consumption | | 10 | 10 | 1 |
| Operating condition scores | Good | 26 | 27 | 0.75 |
| | Moderate | 14 | 12 | |
| | Poor | 0 | 1 | |

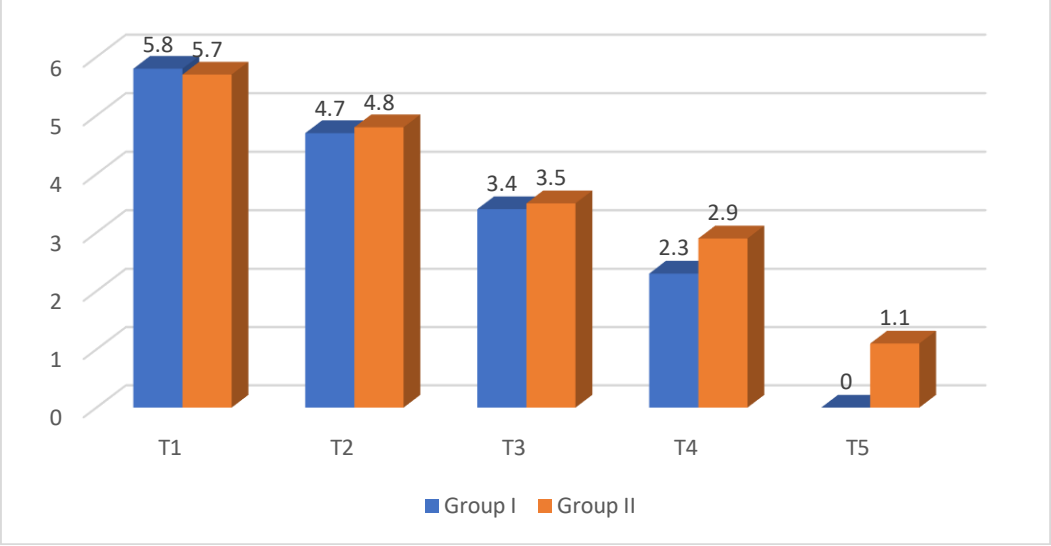
Table I shows that the mean duration of surgery in group I was 23.5 minutes and in group II was 21.4 minutes. Intraoperative fentanyl consumption was seen in 10 each in both groups. Operating condition scores was good seen in 26 in group I and 27 in group II, moderate 14 in group I and 12 in group II and poor in 1 in group II. The difference was non- significant (P> 0.05).

**Table II Verbal anxiety scores (VAS) in both groups**

| Verbal anxiety scores | Group I | Group II | P value |
|---|---|---|---|
| T1 | 3.8 | 3.6 | 0.84 |
| T2 | 3.4 | 3.4 | |
| T3 | 2.2 | 2.7 | |
| T4 | 1.6 | 1.9 | |
| T5 | 0 | 0 | |
| P value | 0.04 | 0.05 | |

Table II shows that verbal anxiety scores at T1 was 3.8 in group I and 3.6 in group II, at T2 was 3.4 in group I and 3.4in group II, at T3 was 2.2 in group I and 2.7 in group II, at T4 was 1.6 in group I and 1.9 in group II. The intragroup difference was significant (P< 0.05).

**Graph I Verbal pain scores (VPS) in both groups**




Graph I shows that mean verbal pain scores in group I and group II, at T1 was 5.8 and 5.7, at T2 was 4.7 and 4.8, at T3 was 3.4 and 3.5, at T4 was 2.3 and 2.9 and at T5 was 0 and 1.2 respectively. The intragroup difference was significant (P< 0.05).

## DISCUSSION

When carried out by skilled medical personnel, retrobulbar eye blocks are typically safe and successful. Globe perforation, retrobulbar bleeding, and damage to adjacent structures are among the possible risks and problems, much like with any surgical operation.[7] Because it may help manage post-operative pain and lessen the need for narcotic painkillers, gabapentin, a drug typically used to treat seizures and nerve pain, is occasionally used in cataract surgery.[8,9] The present study compared gabapentin and melatonin in cataract surgery.

We found that the mean duration of surgery in group I was 23.5 minutes and in group II was 21.4 minutes. Intraoperative fentanyl consumption was seen in 10 each in both groups. Operating condition scores was good seen in 26 in group I and 27 in group II, moderate 14 in group I and 12 in group II and poor in 1 in group II. According to Yousaf et al.[10], melatonin premedication reduced preoperative anxiety statistically significantly in nine out of ten investigations when compared to a placebo. Three research were conflicting, while five trials showed a reduction in pain scores or an opioid-sparing effect. Therefore, melatonin premedication helps individuals who are anxious before surgery, although its analgesic effects during the perioperative phase are still debatable.

We observed that verbal anxiety scores at T1 was 3.8 in group I and 3.6 in group II, at T2 was 3.4 in group I and 3.4in group II, at T3 was 2.2 in group I and 2.7 in group II, at T4 was 1.6 in group I and 1.9 in group II. The effects of gabapentin and melatonin on patient satisfaction with the surgeon, anxiety, discomfort, and sedation levels during cataract surgery were investigated by Khezri et al.[11] 136 patients, aged 35 to 85, due for cataract surgery were randomly allocated to one of three study groups and given either melatonin (6 mg), gabapentin (600 mg), or a placebo 90 minutes before they entered the operating room. Along with the surgeon's degree of satisfaction, scores for sedation, pain, and anxiety throughout the block and surgery were assessed. When compared to the placebo group, anxiety levels in the melatonin and gabapentin groups significantly decreased after starting premedication and continuing into the early postoperative phase. The melatonin, gabapentin, and placebo groups did not differ statistically significantly in their sedation scores during retrobulbar implantation. The three groups' intraoperative and postoperative pain levels did not differ from one another. The surgeon reported similar quality operating circumstances throughout the surgery for each of the three research groups.

We observed that mean verbal pain scores in group I and group II, at T1 was 5.8 and 5.7, at T2 was 4.7 and 4.8, at T3 was 3.4 and 3.5, at T4 was 2.3 and 2.9 and at T5 was 0 and 1.2 respectively. In their study, Ismail et al.[12] divided 40 patients undergoing cataract surgery under topical anesthesia into two groups (20 patients each) and gave them oral premedication in the form of either a placebo tablet (control group) or a 10 mg melatonin tablet (melatonin group) 90 minutes before the procedure. Melatonin significantly reduced the anxiety scores (median, interquartile range) compared to the placebo group ($P = 0.04$ and $P = 0.005$). Following premedication, the scores dropped from 5, 3.5–6, to 3, 2-3, and during operation, to 3, 2-3.5. Both the intraoperative fentanyl demand (median, interquartile range) and perioperative verbal pain scores were considerably lower in the melatonin group than in the control group (median, 0-32.5 vs. 47.5). The melatonin group used less fentanyl after surgery (median, interquartile range) and experienced significantly lower levels of perioperative verbal pain than the control group (0, 0-32.5 vs. 47.5, 30-65 microg, respectively; $P = 0.007$). Melatonin also significantly decreased IOP (mean +/- sd) after premedication, from 17.9 +/- 0.9 to 14.2 +/- 1.0 mm Hg, and after surgery, it decreased to 13.8 +/- 1.1 mm Hg ($P < 0.001$). Furthermore, it provided better working conditions.

The shortcoming of the study is the small sample size.

## CONCLUSION

Authors found that melatonin and gabapentin pretreatment both lessen anxiety in a similar way. Furthermore, a single oral dosage of gabapentin before to surgery is associated with improved sedation scores during the retrobulbar block and lowers discomfort.

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