Brief Communication

Comparison of Pain Level After Cataract Surgery Using Local Anesthesia versus General Anesthesia at Eye Hospital

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Abstract

Background: Patients undergoing surgery may experience postoperative pain. The purpose of this study was to compare postoperative pain after cataract surgery with local anesthesia and general anesthesia performed at the Eye Hospital.

Materials and Methods: The study was a descriptive-analytic with a cross-sectional design, conducted at the Eye Hospital. There were 100 consecutive patients undergoing phacoemulsification procedures enrolled from September to November 2020. We assessed primary data using the Visual Analogue Scale (VAS) 24 hours after cataract surgery.

Results: The results were obtained based on the level of pain felt by the patient within 24 hours postoperatively. Of patients with general anesthesia, 34 people reported the most complaints, no pain in 30 people (88.2%), mild to moderate pain in four people (11.8%), and no complaints of severe pain. In 66 patients with local anesthesia, 35 people (53.0%) had no complaints of pain, 31 people (47.0%) had mild to moderate pain, and none complained of severe pain. By Chi-Square analysis, we found a significant difference between the type of anesthesia and postoperative pain ($p<0.001$).

Conclusion: The study found more patients without pain with general anesthesia than with local anesthesia in post-cataract surgery.

Keywords: General anesthesia, Local anesthesia, Phacoemulsification, Postoperative pain

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Introduction

According to the International Association for the Study of Pain (IASP), pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of damage (1). Pain is a subjective sensation in which a stimulus that causes pain damages tissue's emotional impact.

The number of operations in the world is vast. A study in 56 countries in 2004 estimated the number of surgical procedures at around 234 million per year, almost double the annual birth rate (2). Therefore, anesthesia is one of the most important things to consider in surgery. Local anesthetics are often used in patients undergoing surgery, especially eye surgery (3). Local anesthetics work by blocking direct nerve transmission by blocking sodium channels which cause reduced pain signal transmission (4). General

anesthetics work by interactions between rapidly soluble lipid molecules across the blood-brain barrier and, upon arrival, cerebral circulation leading to loss of consciousness (4).

From a previous study, 51 people underwent eye surgery under general anesthesia from September 2015 to November 2015 at the Sumatra Medical Eye Center (SMEC) Hospital. Pain assessment performed with the Visual Analogue Scale (VAS) showed 42 people (82.3%) consisting of 64.7% in intraocular surgery and 17.6% in extraocular surgery. The highest Visual Analogue Scale (VAS) score is 1-3, with mild pain. 76.5% of subjects complained in the first 24 hours after eye surgery. Eight people used the visual analog scale (VAS) for intraocular cataract surgery with a score of 2, which was mild pain, and decreased over time (5).

Until now, not much is known about the prevalence of postoperative eye surgery with local anesthesia and the comparison of the incidence of postoperative pain with local anesthesia with general anesthesia. This study compares postoperative pain after using local and general anesthesia for cataract surgery at the Sumatra Medical Eye Center (SMEC) Hospital.

Methods

This study was descriptive-analytic and conducted using primary data. The study was conducted after institutional ethics approval by interviews using the visual analog scale (VAS) to assess the prevalence of post-cataract eye pain under local anesthesia and general anesthesia at the Sumatra Medical Eye Center (SMEC) Hospital Medan.

This research was conducted at the Hospital *Sumatra Medical Eye Center* (SMEC) Medan, North Sumatra Province. The hospital was chosen as the research location. In this hospital, various types of eye surgery are performed using local and general anesthesia. In addition, the study population is also quite large. Researchers conducted a study at the Sumatra Medical Eye Center Hospital (SMEC) because, judging from the number and eye surgeries that have been performed, this hospital has the most frequently performed intraocular cataract surgery using local anesthesia and general anesthesia.

Data collection and collection were carried out for three months, from September to November 2020. The study population was all patients who underwent intraocular cataract surgery using local anesthesia and general anesthesia at the Sumatra Medical Eye Center (SMEC) Hospital. This study used total sampling by taking all Sumatra Medical Eye Center (SMEC) Hospital patients who met the inclusion and exclusion criteria for intraocular cataract surgery using local anesthesia and general anesthesia.

We included patients who underwent cataract surgery under local and general anesthesia, aged 18–70 years old, ASA I-II, with good communication skills and willingness to be a research subject. We excluded patients with psychiatric illness, history of seizures, history of drug abuse, and history of pain before surgery.

Data collection techniques in this study used primary data, namely interviews with postoperative patients with intraocular cataracts under local anesthesia and general anesthesia using the Visual Analogue Scale (VAS). Pain intensity assessment was carried out by asking the level of pain experienced by patients after cataract surgery under local anesthesia and general anesthesia within 24 hours after surgery, using a pain VAS 1-10. Patients who did not feel pain were given a score of 0, and samples with severe pain scored 10. The data obtained from the primary questionnaire were recorded, grouped, entered into a computer, and processed using the SPSS program.

Results

In this study, samples that met the inclusion and exclusion criteria were obtained from as many as 100 people who were taken using a consecutive sampling technique. The age of the patients ranged from 18 to 70 years. Sixty-six patients used local anesthesia, consisting of 42 women (63.7%) and 24 men (36.3%). Thirty-four patients used general anesthesia consisting of 14 women (41.2%) and 20 men (55.6%). From all the observed samples, the sample characteristics can be distributed according to the type of eye surgery method under general anesthesia and local anesthesia with the level of pain complaints in the first 24 hours after

Table 1: Complaints of Pain Level 24 hours After Eye Surgery.

		Pain Complaints				P value
		No pain		Mild to Moderate Pain		
		N	%	N	%	
Anesthesia type	General Anesthesia	30	88.2	4	11.8	<0.001
	Local Anesthesia	35	53.0	31	47	
	Total	65	65.0	35	35.0	

cataract surgery, as shown below.

Based on complaints of pain 24 hours after cataract surgery using general anesthesia as in Table 1, the level of pain in the sample that was most often felt was no pain in as many as 30 people (88.2%) who felt complaints of mild pain as many as three people (8.8%). In contrast, those with moderate pain were one person (2.9%), and None of the patients complained of severe pain. Twenty-four hours after cataract surgery with local anesthesia, based on complaints of pain, the level of pain felt by the sample the most was mild to moderate. Thirty-one people (47.0%), who did not feel pain complained as many as 35 (53.0%), and none of the patients complained of severe pain. There is a significant difference in pain using general anesthesia and local anesthesia.

Discussion

In this study, there were a total of 100 patients. The number of eye surgeries under local anesthesia was 66, and under general anesthesia was 34 patients. Based on complaints of pain in the first 24 hours after cataract surgery under general anesthesia (Table 1), the level of pain was no in 30 patients (88.2%), mild in 3 patients (8.8%), moderate in one patient (2.9%) and no patient with severe pain. This result differs from a previous study that saw eight patients post intraocular cataract surgery with most visual analogs on a scale of 2, namely mild pain and reduced over time (5).

Based on complaints of pain in the first 24 hours after cataract surgery with local anesthesia, most of the samples with mild to moderate pain were 31 patients (47.0%), and 35 patients (53.0%) had no pain complaints. These results differ from a study that stated that postoperative cataract pain with local anesthesia was 55% without pain and discomfort after surgery, 325 with mild discomfort, 8% with mild pain, and only 5% with moderate to severe pain (6). The level of pain felt by the 285 inclusion samples after cataract surgery was 31.5% pain-free, 41% mild pain, 23.2% moderate pain, 3.5% severe pain, and 0.7% undefined pain (7).

In a study conducted by the Department of Ophthalmology University of Nigeria Teaching Hospital in 2015, cataract surgery under local anesthesia was performed on 30 samples consisting of 16 male patients and 14 female patients. The level of pain complaints was measured by the Visual Analogue Scale (VAS); the average pain score was at level two or categorized as mild pain (8). If viewed from the results of this study, the Visual Analogue Scale (VAS) score in the first 24 hours after cataract surgery found more patients without pain under general anesthesia than local anesthesia.

The same research was conducted in 2016 at the Sumatra Medical Eye Center (SMEC) Hospital Medan. The study had 149 samples divided into 114 people using local anesthesia and 35 people using general anesthesia, where the use of general anesthesia pain level is lower than the pain in local anesthesia (9).

Conclusion

Based on the research and discussion results, it can be concluded that the Visual Analogue Scale (VAS) score in post-cataract surgery found more patients without pain with general anesthesia than with local anesthesia.

Acknowledgment

None.

Conflicts of Interest

The authors declare that they have no conflict of interest.

References

1. Kent ML, Tighe PJ, Belfer I, Brennan TJ, Bruehl S, Brummett CM, et al. The ACTTION-APS-AAPM Pain Taxonomy (AAAPT) Multidimensional Approach to Classifying Acute Pain Conditions. J Pain. 2017;18(5):479-89.
2. Chou R, Gordon DB, de Leon-Casasola OA, Rosenberg JM, Bickler S, Brennan T, et al. Management of Postoperative Pain: A Clinical Practice Guideline From the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council. J Pain. 2016;17(2):131-57.
3. Lodhi O, Tripathy K. Anesthesia For Eye Surgery. StatPearls. Treasure Island (FL): StatPearls Publishing. Copyright © 2022, StatPearls Publishing LLC.; 2022.
4. Taylor A, McLeod G. Basic pharmacology of local anaesthetics. BJA Educ. 2020;20(2):34-41.
5. Demir M, Akpolat C, Karapapak M, Sendul SY, Guven D. A double-blinded randomized clinical trial for pain perception: The efficacy and safety of topical cold saline solution anesthesia in phacoemulsification. Indian J Ophthalmol. 2022;70(1):124-30.
6. Coppens M, Versichelen L, Mortier E. Treatment of postoperative pain after ophthalmic surgery. Bull Soc Belge Ophtalmol. 2002(285):27-32.
7. Uche NJ, Okoye O, Okoye OI, Arinze O, Okoloagu NN. Topical-intracameral anesthesia in manual small incision cataract surgery: A pilot study in a Tertiary Eye Care Center in Africa. Niger J Clin Pract. 2016;19(2):201-6.
8. Rothschild PR, Grabar S, Le Dû B, Temstet C, Rostaqui O, Brézin AP. Patients' subjective assessment of the duration of cataract surgery: a case series. BMJ Open. 2013;3(5).
9. Katz J, Feldman MA, Bass EB, Lubomski LH, Tielsch JM, Petty BG, et al. Injectable versus topical anesthesia for cataract surgery: patient perceptions of pain and side effects. The Study of Medical Testing for Cataract Surgery study team. Ophthalmology. 2000;107(11):2054-60.