

Research Article

Lidocaine versus lidocaine dexmedetomidine on hemodynamics and oxygen saturation during cataract surgery

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Abstract

Background/aim: Cataract surgery is the most common surgical procedure in ophthalmology practice. Advantages of regional anesthesia over general anesthesia in cataract surgery are numerous; it is generally safer with less incidence of postoperative nausea and vomiting. Conventionally, a mixture of lidocaine and bupivacaine is used as local anesthetic solution. Dexmedetomidine is a novel selective α_2 receptor agonist that produces sedation and analgesia without causing respiratory depression. This study aimed to compare the effect of lidocaine versus mixture of lidocaine dexmedetomidine on hemodynamics and oxygen saturation during cataract surgery. **Patients and methods:** This study was a prospective, randomized, double blinded study on forty patients of both sexes allocated into two groups of 20 patients each aged between 18 and 70 years, ASA physical status I or II who underwent cataract surgery under local anesthesia between May 2016 and January 2017. **Results:** There was significant difference was recorded in MAP between group Lidocaine and Lidocaine dexmedetomidine with higher values at Lidocaine group. No significant difference in between the studied groups in oxygen saturation. **Conclusions:** adding dexmedetomidine produce more hemodynamic stability without respiratory depression.

Keywords: Lidocaine, dexmedetomidine and cataract surgery.

Introduction

A wide range of anesthetic techniques has been developed for cataract surgery during that period, including general, regional and topical anesthesia⁽¹⁾. Regional anesthesia in ophthalmic surgery has become increasingly popular for most ophthalmic surgical procedures⁽²⁾ as it is associated with less hemodynamic instability, less respiratory depression, better postoperative pain relief, and less nausea and vomiting than general anesthesia⁽³⁾. Dexmedetomidine is a highly selective α_2 -adrenoreceptor agonist that has an α_2 to α_1 selectivity ratio of 1600: 1; therefore, it is eight times greater than that of clonidine⁽⁴⁾. Dexmedetomidine enhances central and peripheral neural blockades when added to LAs as an adjuvant⁽⁵⁾.

Patients and methods

Study design: This prospective randomized, double blinded study was approved

by local Ethical Committee of anesthesia and intensive care department, faculty of medicine, Minia University. Prior written consent was obtained from each patient.

Study participants: Forty patients underwent cataract surgery were enrolled between May 2016 and January 2017.

Exclusion criteria: The exclusion criteria for participants in this study were diabetic patients, emergency operation, uncooperative patient or sensitivity to used drugs.

The collected data were coded, tabulated, and statistically analyzed using SPSS program (Statistical Package for Social Sciences) software version 20.

- Descriptive statistics were done for parametric quantitative data by mean, standard deviation and minimum & maximum of the range, while they were

- done for categorical data by number and percentage.
- Analyses were done for parametric quantitative data between the three groups using One Way ANOVA test followed by Post Hoc Tukey correction between each two groups, and for non-parametric quantitative data between the three groups using Kruskal Wallis test followed by Mann Whitney test between each two groups.

- The level of significance was taken at (P value < 0.05).

Result

Mean arterial pressure (MAP):

Preoperatively there was no statistically significant difference in mean arterial blood pressure between the studied groups. Intraoperatively a significant difference was recorded in MAP between group L and LD at 5 and 15 minute with higher readings recorded at group L.

Table (1): Changes in the mean MAP in the studied groups

Time	Group L (n=20)	Group LD (n=20)	P value
Preoperative Range Mean ± SD	(75-117) 96.5±9.53	(75-112) 97.03±10.27	0.405
At 5 min Range Mean ± SD	(80-119) 98.93±9.17	(69-107) 89.03±10.28	<0.001*
At 15 min Range Mean ± SD	(81-113) 100.3±10.13	(61-100) 81.7±10.13	<0.001*

- *: Significant difference among studied groups (p < 0.05).

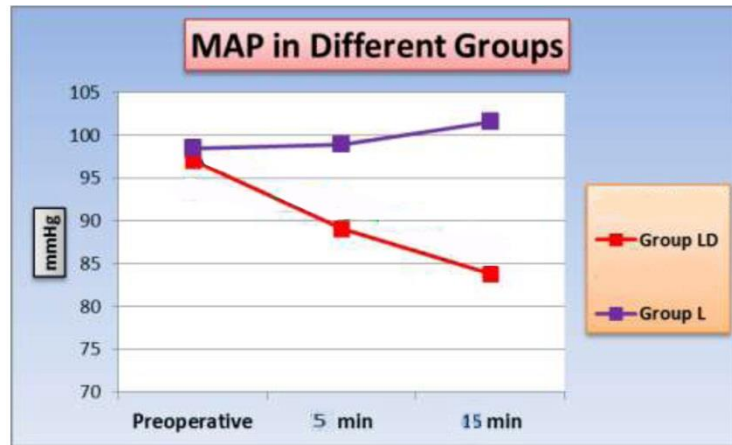


Figure (1): Changes in the mean MAP in the studied groups

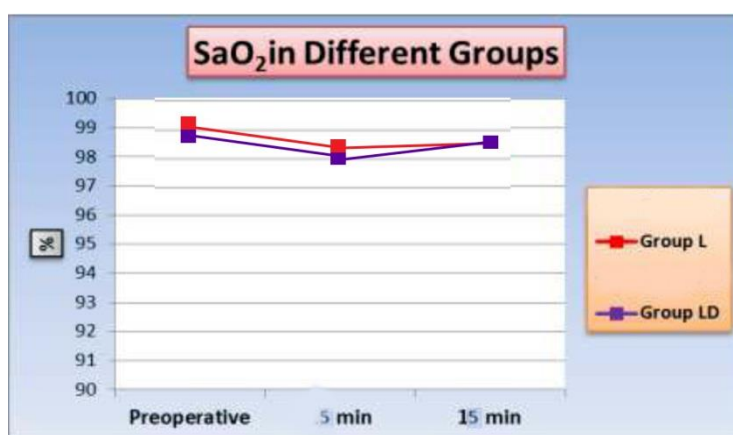
Changes in SaO₂:

Regarding oxygen saturation there was no significant difference detected among the studied groups either preoperative or at 5 and 15 min. after injection.

Table (2) changes in SaO₂ among studied groups

SPO ₂	Group L (n=20)	Group LD (n=20)	P value
Preoperative Range Mean ± SD	(99-100) 99±1.04	(98-100) 99.06±1.21	0.308
At 5 min Range Mean ± SD	(98-99) 98.9±0.61	(99-100) 99.43±0.8	0.509
At 15 min Range Mean ± SD	(98-100) 98.46±0.85	(98-100) 98.5±0.66	0.178

- *: Significant difference at p value < 0.05)



Discussion

The provision of ophthalmic regional anesthesia for cataract surgery varies worldwide. These may be chosen to eliminate eye movement, and both non kinetic and kinetic methods are widely used. All available local anesthetics have been used for eye block, either as a sole agent or a mixture of two agents. The choice of local anesthetics should be based on the pharmacological properties and availability of the drugs, taking into account the requirement for rapid onset.

Dexmedetomidine is a selective alpha 2-adrenoreceptor agonist. It provides dose-dependent sedation, analgesia, sympatholysis, and anxiolysis without relevant respiratory depression

On discussing hemodynamic changes in our study, we founded that there were no

statistically significant differences in the mean blood pressure between the studied groups preoperatively.

Intraoperatively, a significant difference was recorded in MAP between group L and LD at 5 and 15 minute with higher readings recorded at group L. The decrease in MAP reported in dexmedetomidine groups was mild and did not exceed 20% of basal line values with no need to administer ephedrine.

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