International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2015): 6.391

Comparison between Ropivacaine and Ropivacaine with Dexamethasone for Post Operative Analgesia in Peribulbar Block for Small Incision Cataract Surgeries

Dr. Arun Kumar .A, Dr. Raghavendar .G, Dr. Shanthala Arun Kumar

Abstract: ***Background: Most of the opthalmic procedures are done under local anaesthesia as the patients being elderly present with intercurrent diseases.1 Ropivacaine is an amino amide local anaesthetic agent with greater margin of safety than Bupivacaine for cardio toxicity and neurotoxicity. Dexamethasone is a long acting glucocorticoid with little mineralocorticoid effect. The efficacy and safety of Ropivacaine for anaesthesia during cataract surgery is well studied abroad, with most of the studies using peribulbar technique and hyaluronidase to facilitate the onset of anaesthesia and akinesia. Limited studies are done with dexamethasone and local anaesthetic for peribulbar block. Ropivacaine is recently being introduced in Indian market and needs to be evaluated in Indian perspective. Objective: To compare the effect of 0.75%Ropivacaine and 0.75%Ropivacaine with Dexamethasone on post operative analgesia in small incision cataract surgeries. Methods: We selected 50 ASA physical status I & II patients undergoing small incision cataract surgery after thorough preanaesthetic evaluation in SSIMS&RC, Davangere, Karnataka. Procedure of blocks After written informed consent from the patients they will be randomized to receive peribulbar anaesthesia using 0.75% Ropivacaine with hyaluronidase 50 IU/ml in group R (n=25) or 0.75% ropivacaine and dexamethasone with hyaluronidase 50 IU/ml in groupD (n=25). The investigators performing the injections and assessment will be blinded to the solution used. Peribulbar injection of local anaesthetic will be given by using 25 G, 1 inch needle and drug will be injected until peribulbar fullness was observed or to a maximum volume of 7 ml including Dexamethasone 1mg . Postoperatively, patients were shifted to the post operative ward and time for the first rescue analgesic required was noted. Results: Data collected is subjected to statistical analysis.p value <0.05 is considered statistically significant. The number of patients who were pain free was less in group R than group D at 2 to 6 hrs. Conclusion: Addition of Dexamethasone to Ropivacaine resulted in significant increase in prolongation of time for rescue analgesia and is safe and clinically superior adjuvant.***

Keywords: Rpovicaine, Dexamethasone, Cataract, Peribulbar Block

1. Aim of Study

To compare the effect of 0.75% Ropivacaine and 0.75% Ropivacaine with Dexamethasone on post operative analgesia.

2. Objective

The objective of the study is to establish the efficacy of Dexamethasone on addition to Ropivacaine on postoperative analgesia in peribulbarblock in small incision cataract surgeries.

3. Introduction

Most of the opthalmic procedures are done under local anaesthesia as the patients being elderly present with intercurrent diseases.[1] Ropivacaine is an amino amide local anaesthetic agent withgreater margin of safety than Bupivacaine for cardio toxicity and neurotoxicity. [2]Dexamethasone is a long acting glucocorticoid with little mineralocorticoid effect.[1] The efficacy and safety of Ropivacainefor anaesthesia during cataract surgery is well studiedabroad, with most of the studies using peribulbar technique and hyaluronidase to facilitate the onset of anaesthesia and akinesia. Limited studies are done with dexamethasone and local anaesthetic for peribulbar block. There is reduced risk for globe perforation and optic nerve damage with peribulbar (extraconal) than retrobulbar (intraconal) block.

Ropivacaine is recently being introduced in Indian market and needs to be evaluated in Indian perspective.

4. Review of Literature

1) Mohamed Sidky M, Azza Atef Abd, Amira Fathy H. carried out study on 50 ASA 1 and 2 patients using Dexamethasone Bupivacaine and Bupivacaine for peribulbar block in posterior segment eye surgeries and found that adding Dexamethasone to Bupivacaine as an adjuvant provided prolonged duration of akinesia and analgesia with reduced number of patients requiring analgesia and time for first rescue analgesia and reduced inflammatory response as well.
2) G Nicholson, B Sutton, G M Hall compared the efficacy of 1% Ropivacaine with 0.75% Bupivacaine and 2% Lidocaine for peribulbar block for time to adequate block and time for ocular eyelid movements and found that Ropivaciane is an effective alternative for Bupivacaine in peribulbar anaesthesia.
3) Woodward D.K et., compared the effect of 1%Ropivacaine and 0.5% Bupivacaine/2% Lignocaine with Hyaluronidse 50IU/ml and found that 1% ropivacaine with hyaluronidase 300 IU ml^{-1} is a suitable mixture for peribulbar block, with onset and quality of anaesthesia similar to those achieved with Bupivacaine/lidocaine and Ropivacaine can be used as the sole anaesthetic agent.

5. Materials & Methods

Data Collection

A double blind randomized study is to be carried out on 50 ASA physical status I & II patients who will be undergoing small incision cataract surgery. After thorough preanaesthetic evaluation patients refusing consent, taking anticoagulants, allergic to amide local anaesthetic or hyaluronidase, patients with psychiatric illness, with major systemic diseases, and with a single eye areexcluded from the study.

Procedure of blocks

After written informed consent from the patients they will berandomized to receive peribulbaranaesthesia using 0.75% Ropivacaine with hyaluronidase 50 IU/ml in group R (n=25) or 0.75% ropivacaine and dexamethasone with hyaluronidase 50 IU/ml in groupD(n=25). Standard monitoring will be established, vitals will be monitored.

The anaesthetic solution will be prepared individually immediately before block.

The investigators performing the injections and assessment will be blinded to the solution used. Peribulbar injection of local anaesthetic will begiven by using 25 G, 1 inch needle at the junction of lateral one-third and medial two-third directed deliberately toward the orbital floor and drug will be injected until peribulbar fullness was observed or to a maximum volume of 7 ml including Dexamethasone 1mg . Light massage over the globe will be applied for the spread of solution for a minute.

Postoperatively, patients were shifted to the post anaesthetic care unit and time for the first rescue analgesic required was noted.

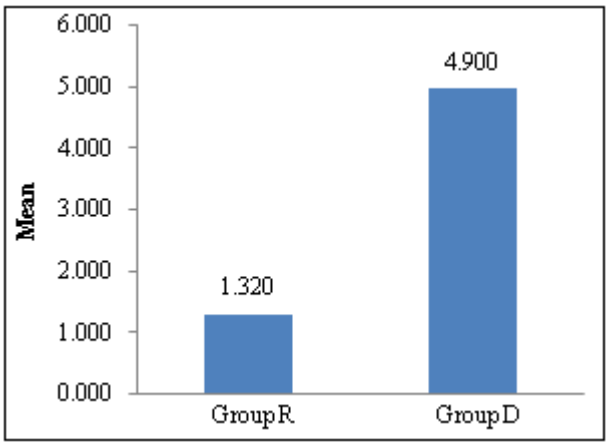
6. Result

The results are subjected to statistical analysis using epi-infoversion7 system and student t test.

Group		N	Mean	Std. Deviation	Std. Error Mean
Age	Group R	25	64.6800	7.83007	1.56601
	Group D	25	59.6400	9.69484	1.93897

		Group		Total
		Group R	Group D	
Gender	Male	14	12	26
		56.0%	48.0%	52.0%
	Female	11	13	24
		44.0%	52.0%	48.0%
Total		25	25	50
		100.0%	100.0%	100.0%

Group		N	Mean	Std. Deviation	p value
Time for rescue analgesia	Group R	25	1.320	0.476	0.000
	Group D	25	4.900	0.764	



7. Discussion

- It's a Prospective, double blinded randomized study.
- The pathophysiological mechanisms for steroid effect may be related to anti-inflammatory action, edema reduction, shrinkage of connective tissue.
- Local steroid application was found to suppress transmission in thin unmyelinated c fibres.
- It has been known that steroids may directly bind to intracellular glucocorticoid receptor and their effect is predominantly mediated through altered protein gene transcription.
- The biological half life of dexamethasone is 36 to 58hrs, it is normal for a postoperative wound to be redressed, minimising the masking of clinical signs of infection

8. Inference

There is a significant prolongation of time for rescue analgesia when Dexamethasone was added to Ropivacaine. Since there are limited studies done further research on this context appears to be beneficial.

References

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