



Original Research Article

Hypersensitivity to Injection Drugs in Peribulbar Block - A Clinical Study

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ABSTRACT

Aim: To clinically analyze the cases of allergic reactions to injection drugs following peribulbar block for cataract surgery.

Methods: A 2 year retrospective study was conducted in a tertiary care teaching hospital for all the patients who underwent cataract surgery and developed allergic reactions following peribulbar block.

Results: Three out of 2904 Patients developed allergic reaction to hyaluronidase. Two of them developed Type I systemic anaphylactic reaction immediately after peribulbar block and one patient developed delayed hypersensitivity reaction to orbital tissues 24 hours later. Patients with type I reaction presented with breathlessness, hoarseness of voice, generalized itching, hypotension, Wheeze, falling Oxygen saturation. Intradermal skin test with test dose of hyaluronidase also showed similar reaction but to lesser extent. Patient with delayed reaction to hyaluronidase presented with local orbital reaction with proptosis, chemosis, and painful restriction of extra ocular movements which developed after 24 hours. Intradermal skin test with hyaluronidase showed in duration developing after 2 days at injection site. Pre operative Lidocaine test dose was negative in all the 3 patients, which confirmed the allergic reaction to hyaluronidase.

Conclusion: Anaphylaxis to hyaluronidase is a rare complication of peribulbar anesthesia. They can cause both Systemic type I anaphylactic reaction as well as delayed local type IV reactions. They may occur even without prior sensitization as in our cases. Simple Intradermal test dose with a mixture of hyaluronidase and Lidocaine preoperatively in all patients can prevent serious allergic reactions to either of these drugs.

Key words: Peribulbar block, hyaluronidase, Anaphylaxis.

INTRODUCTION

Even though cataract surgery can be performed under topical anesthesia, most surgeons prefer regional block with either peribulbar or retrobulbar anaesthesia. Peribulbar anaesthesia is more often safer

than retrobulbar block as there is much less chance of globe perforation and diffusion of anesthetic agents into the central nervous system.

Hyaluronidase is an enzyme used in peribulbar block as an adjuvant to 2%

Lidocaine to increase the spread of anesthetic agents. [1]

It increases the connective tissue permeability by causing hydrolysis of hyaluronic acid, which in turn reduces the viscosity of cellular matrix causing enhanced diffusion of injected drugs and increasing their absorption and spreading activity. [2]

It is used to reduce tissue edema and swelling by reducing inflammation and fibrin deposition. It is used as an adjunct to increase the dispersion and absorption of injected drugs and enhancing the drug effect. [3]

Apart from ophthalmology, they are used in subcutaneous urography for increasing the reaction of radio opaque agents. They are also used in pain management during epidural injection. Unlabelled used includes treatment of vitreous hemorrhage (ovine Hyaluronidase) and in chronic pain management. [4]

Hyaluronidase is used in peribulbar block in concentrations of 50 I u /ml and 300 I v/ml. Both the Concentrations improved the block quality at five minutes when compared to peribulbar block without Hyaluronidase.

When used in higher concentrations it not only improved the block quality but also the speed of block onset. [5,6]

Mixing of Hyaluronidase with local anesthetic agents not only increased the effect of anesthesia but also reduced the volume of injection of anesthetic drugs. [7,8]

Hyaluronidase can rarely cause severe allergic reactions. Few cases have been reported, most cases occur after peribulbar block for cataract surgery.

Allergic reactions to Hyaluronidase can be both Type I (IgE) mediated and delayed cell mediated reactions. IgE Mediated reactions can be diagnosed by skin allergy tests such as Intradermal tests and

prick tests. [9] Rarely it occurs following pain management during epidural injection. [10,11]

Skin testing for allergy with Hyaluronidase (150 U/CC) 0.1 ml intradermally can diagnose Hyaluronidase allergy.

AIM

To clinically analyze the cases of allergic reactions to the Injection of drugs following peribulbar block for cataract surgery.

MATERIALS AND METHODS

A 2 year retrospective study was conducted on patients who underwent cataract surgery from July 2011 to July 2013 in a tertiary care teaching hospital. Patients who developed allergic reactions following peribulbar anesthesia were clinically analysed.

Inclusion criteria:

All the patients who underwent cataract surgery with peribulbar block

Exclusion criteria:

1. Patients who developed other complication of peribulbar block not related to drug allergy
2. Patients with Previous history of drug allergy or hypersensitivity.

Routine peribulbar block with a mixture of 2% Lidocaine with adrenaline and Hyaluronidase (50 IU/ml) was given in all patients after careful preoperative evaluation. 0.1ml intradermal Lidocaine test dose was given to all patient prior to peribulbar block. None of the patient had history of previous drug allergy.

Patients who developed allergic reactions after peribulbar injections were analysed clinically.

RESULTS

Total of 2904 patients, three patients developed hypersensitivity reaction following peribulbar block. The mean age of patients included in study was 60±10 years. In all patients hypersensitivity to

Hyaluronidase was the cause for the reaction (as confirmed by positive skin test). Two patients developed generalized Type – I anaphylactic reaction immediately after peribulbar block, one patient developed delayed local inflammation to orbit 24 hours after the peribulbar block.

In two patients with generalized type I hypersensitivity reaction immediately after the block patients developed symptoms of generalized Itching, hoarseness of voice and breathlessness. Signs include diffuse bilateral wheeze, maculopapular rash, hypotension, reduced Oxygen saturation. Both the patients were resuscitated by anesthetist with intravenous adrenaline, hydrocortisone, anti histamines, supplemental oxygen, IV fluids, and nebulization. Both the patients improved after treatment and their condition stabilized.

One patient developed delayed hypersensitivity reaction to Hyaluronidase 24

hours after peribulbar block characterized by lid edema, conjunctiva chemosis, mild proptosis, pain on ocular movements with restricted extra-ocular movement, and diplopia which persisted for five days and then reduced with local and system steroids. (Iv dexamethasone).

In two patients with Type – I anaphylactic reaction to Hyaluronidase after two days with intradermal injection of test dose Hyaluronidase 0.1 ml of 50 IU / ml, the patient started developing wheal at the site of injection along with itching, wheeze and breathlessness. They were treated with Oxygen, nebulization hydrocortisone and anti histaminics. In one patient with delayed hypersensitivity reaction to orbit, Intradermal Injection of 0.1 ml of test dose of Hyaluronidase did not produce any immediate effect but caused localized indurations after 48 hours.

Table I: Immediate Symptoms and Signs following Peribulbar Block

Patients	Hoarseness of Voice	Breathlessness	Itching	Wheeze	BP	Oxygen Saturation	Type of Allergic Reaction
I	Present	Present	Generalized	Bilateral diffuse	80/60	76%	Type I
II	Present	Present	Generalized	Bilateral diffuse	84/60	82%	Type I

Table II: Localised Orbital Symptoms Following Peribulbar Block

Patients	Edema of Eye lids	Pain in Ocular Movements	Diplopia	Proptosis	Restriction of Ocular Movement	Type of Allergic Reaction
III	Present	Present	Binocular	Axial	Generalized Restriction	Type IV

Table III: Symptoms and signs after injection of 0.1 ml of Hyaluronidase Intradermally

Patients	Itching	Hoarseness of Voice	Wheeze	Reaction of Injection site	Type of Allergic Reaction
I	Present	Present	Diffuse Bilateral	Immediate	Type I
II	Present	Present	Diffuse Bilateral	Immediate	Type I
III	Absent	Absent	Absent	Delayed (after 48 hour)	Type IV

DISCUSSION

Hyaluronidase allergy though rare can cause severe allergic reactions, both local and systemic. Hyaluronidase injections are widely used by ophthalmologist to aid the spread of local anesthetic agents during peribulbar block for cataract surgery.

Most patients with allergic reaction to Hyaluronidase had uneventful previous

injection record to Hyaluronidase. This may be due to prior sensitization during previous Injection [12] In all our cases the injection of Hyaluronidase was dose for the first time and there was no prior sensitization, Hypersensitivity to first injection dose are also possible. [9]

Localised Hyaluronidase injection usually causes allergic reaction in the

injected area without much systemic effects, but rarely generalized reactions do occur after localized peribulbar block due to incidental intravenous injection of drugs. [11,13]

Intravenous administration of Hyaluronidase increases the generalized allergic reaction more than localized injection. [14] In two of our patients with anaphylactic reaction after peribulbar block, even the Intradermal test dose injection of 0.1ml of Hyaluronidase given to diagnose Hyaluronidase allergy incited a systemic reaction, which rules out incidental intravenous administration during peribulbar block as a cause for Type I anaphylactic reaction.

Acute orbital inflammatory symptom can occur as a complication of Hyaluronidase allergy after peribulbar or retrobulbar block characterized by periorbital pain, proptosis, chemosis and extra ocular movement restriction which may mimic like orbital pseudotumour usually after 12-72 hours of uneventful Cataract Surgery. [2] One of our cases also presented with similar finding after 24 hours of Cataract Surgery signifying local allergic reaction. In peribulbar block 2% lidocaine can also be associated with immediate and delayed reaction. The cutaneous symptoms are most common but serious reactions can also occur [15,16] In our study no cases of Lidocaine hypersensitivity were there. This might be due to routine intradermal test dose injection given for all patients prior to cataract surgery which may detect Lidocaine hypersensitivity prior to peribulbar block.

CONCLUSION

Allergic reaction to Hyaluronidase is a rare complication of peribulbar anesthesia. They can cause both systemic type I anaphylactic reaction as well as delayed local type IV reaction. They may occur even without prior sensitizations to these agents

as in our cases. Intradermal test dose with 0.1ml of Hyaluronidase can detect potential anaphylactic reactions in some patients. Allergic reaction to 2% lidocaine is rare as routine preoperative test dose is given for all patients prior to cataract surgery. Simple intradermal test dose with a mixture of Hyaluronidase and Lidocaine (rather than only Lidocaine) prior to peribulbar block can prevent potentially serious allergic reactions to either of these drugs.

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