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PUPILLARY DILATION AS AN INDICATOR IN CLINICALLY DIFFERENTIATING BETWEEN SEVERE POST-OPERATIVE INFLAMMATION AND ENDOPHTHALMITIS

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ABSTRACT

Acute severe inflammation post cataract surgery is an ophthalmic emergency and it is imperative to differentiate between an infectious and non- infectious etiology. Since acute severe post-operative endophthalmitis is a grave situation, a good and detailed clinical examination helps to differentiate it from other causes of sterile postoperative inflammation. A poor pupillary dilation in acute post-operative endophthalmitis is attributed to increased levels of bacterial toxins and prostaglandins in the anterior chamber. Thus a trial of mydriatics every 10 minutes for 2hrs to achieve a dilation of 06-08mm is clinically beneficial in differentiating TASS from infectious endophthalmitis in a large majority of cases and aids in instituting further therapy.

KEYWORDS: Pupillary dilation, acute post-operative endophthalmitis, post-operative inflammation, toxic anterior segment syndrome (TASS).

Introduction

Acute severe inflammation post cataract surgery is an ophthalmic emergency and it becomes imperative to differentiate between an infectious and non- infectious etiology(1). This is important for institution of appropriate therapy immediately to avoid any catastrophic complications of the disease. The correct evaluation determines whether we have to immediately intervene with intravitreal antibiotics with related complications or aggressively treat with topical and systemic steroids to control inflammation. Since acute severe post-operative endophthalmitis is a catastrophic situation, a good and detailed examination helps to differentiate it from other causes of sterile postoperative inflammation(2,3). Moreover at times the clinical picture may not be clear or the anterior chamber/vitreous tap may not be reveal the exact cause and offending organism. In such situations we know that an effective outcome is usually achievable in anterior segment inflammation whereas this is not the cases in infectious post-operative endophthalmitis. Thus a simple attempt at achieving adequate pupillary dilation helps clinically differentiate between an infectious and non-infectious aetiology and instituting further therapy.

Material and methods

This is a retrospective case study of 20 patients of acute moderate to severe post-cataract surgery inflammation treated at a tertiary eye care centre from Jan2013 to Jun2016. All patients presenting with moderate to severe post-cataract surgery inflammation were included in the study(4,5). In addition to a detailed anterior segment examination by slit-lamp and posterior segment evaluation, all patients were subjected to a intensive pupillary dilation with tropicamide and phenylephrine eye drops instilled every 10 minutes for 02 hours. A pupillary dilation of 06-08mm within 02hours of initial mydriatic therapy as measured on a slit lamp examination was considered a positive response. A pupillary dilation of ≤ 05mm was labeled as a negative response. An ocular ultrasound was performed in all patients to look for the involvement of posterior segment and presence of low reflectivity echoes and vitreous debris was suggestive of endophthalmitis. On the basis of an initial clinical and ultrasound examination the patients were divided into two groups.

Group A consisted 14 patients who had :

a) Mild to moderated ocular discomfort.
b) Mild to moderate corneal edema.
c) Mild to intense anterior chamber reaction with/without hypopyon.
d)Ultrasound of eye revealed no vitreous echoes.

Group B consisted of 6 patients who had :

a) Moderate to severe ocular pain.
b) Mild corneal edema.
c) Severe anterior chamber reaction with/without hypopyon.
d) Ocular ultrasound revealed moderate to dense vitreous echoes.

The initial clinical diagnosis of Group A was considered to be toxic anterior segment syndrome where as of Group B was considered to be suspected acute post-operative endophthalmitis(6,7,8,9). Intensive pupil dilation was attempted with tropicamide and phenylephrine eye drops every 10 minutes for initial 02hrs. Both the groups were started immediately on prednisolone 1% eye drops 02 hourly, moxifloxacin 0.3% eye drops 06 hourly, and homatropine 2% eye drops 4 hourly. In addition Group B suspected acute post-operative endophthalmitis was administered tab prednisolone 1mg/kgBW and tab Ciprofloxacin 750mg twice daily. The pupillary diameter was noted on the slit-lamp during the initial 02 hours and documented and all patients were monitored for pupillary dilation by slit-lamp examination over the the first 24 hrs.

Exclusion Criteria

a) Poorly dilating patients with preoperative pupillary dilation of < 08mm.
b) Pseudoexfoliation syndrome.
c) Patients on tamsulosin therapy.
d) Glaucoma patients on miotic therapy.

Results

A pupillary dilation of 06-08mm within 02hours of initial mydriatic therapy as measured on a slit lamp examination was considered a positive response whereas a reading of ≤ 05mm was labeled as a negative response.

Of the 14 patients in Group A having clinically evident toxic anterior segment syndrome, 12 patients (85.7%) achieved a pupillary dilation of 06-08mm within 02 hrs of instituting mydriatic therapy. In the remaining 02 patients the pupils dilated to only about 04-05mm in the affected eyes(Fig. 1).

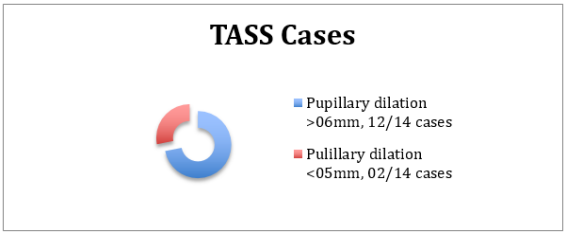

Fig. 1

In Group B only 01 out of 06 cases (16.66%) achieved a pupillary dilation of 06-08mm despit e intensive mydriatic therapy in the initial 02hrs. The other 05 patients (83.44%) failed to achieve a dilation of more than 05mm(Fig. 2).

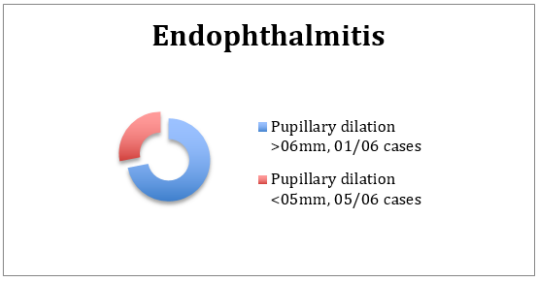

Fig.2

Conclusions

In cases severe post-operative inflammation following cataract surgery, it usually becomes a challenge to differentiate between acute severe post-operative endophthalmitis and toxic anterior segment syndrome. In the acute stages pending investigations and laboratory diagnosis, the management strategy relies heavily on a detailed clinical examination and ultrasonography. The treatment is tailored to the type of inflammation and thus differentiating between infective and non-infective aetiology becomes imperative for a good visual outcome. In peripheral eye centres where vitreo-retinal consultation and diagnostic facilities are not readily available, a good clinical examination with a keen eye for specific features is necessary for instituting the correct therapy. In addition to the clinical features such as presence/ absence of ocular pain, lid edema, corneal edema, fibrinous exudates with hypopyon, poor fundal glow and poor vision on presentation, the evaluation of pupillary dilation with mydriatics is an important indicator of differentiating between toxic anterior segment syndrome and acute post-operative endophthalmitis.

A poor pupillary dilation in acute post-operative endophthalmitis is attributed to increased levels of bacterial toxins and prostaglandins in the anterior chamber. There is uveal congestion and edematous iris tissue becomes resistant to adequate pupillary dilation. A good pupillary dilation with mydriatics is thus very helpful to differentiate toxic anterior segment syndrome from endophthalmitis early in the course of disease. Thus a trial of mydriatics every 10 minutes for 2hrs to achieve a dilation of 06-08mm is clinically beneficial in differentiating TASS from infectious endophthalmitis in a large majority of cases. If the pupil dilates well with mydriatic eye drops, it is more likely that the inflammation is non-infective.

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