Case Report

Bleb-related Infection following Trabeculectomy

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ABSTRACT

Introduction: Bleb-related endophthalmitis after trabeculectomy is a rare but sight threatening complication. Thin walled blebs, occurring after adjunctive use of antimetabolite like mitomycin C and 5-flurouracil, is an important risk factor for bleb-related infections.

Case: Forty-five years old one-eyed male had undergone trabeculectomy in past, had presented with diminution of vision, pain, photophobia in his seeing eye.

Observation: On examination, best corrected visual acuity was 5/60, thin walled avascular bleb with congested conjunctiva, minimal hypopyon, pupil had fibrinous exudate and vitreous reaction. He was diagnosed as bleb-related endophthalmitis. He improved after intra-vitreal and topical antibiotics

Conclusion: Bleb-related infections can be controlled if diagnosed and treated on time.

Key words: Antimetabolites; avascular bleb; bleb-related endophthalmitis; trabeculectomy.

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INTRODUCTION

Endophthalmitis is a sight threatening complication that can occur after any intraocular surgery. Endophthalmitis after glaucoma filtration surgery is rare but is a dreadful complication as it tends to have worse outcome as compared to endophthalmitis occurring after cataract surgery (Song et al., 2002). According to collaborative initial Glaucoma treatment study, incidence of blebitis is 1.5% and bleb-related endophthalmitis (BRE) is 1.1% respectively (Zahid et al., 2013). Use of antimetabolite like mitomycin C and 5-fluorouracil increase the incidence of bleb-related infection.

CASE REPORT

Forty-five years old male who had under gone right eye filtration surgery five years back, presented with history of pain, redness, photophobia for 2-3 days. He also gave history of blurring of vision for same duration. He also gave history of trauma to left eye during childhood and his left eye is non-seeing diagnosed as phthisis bulbi.

On examination, visual acuity (VA) was 5/60 in right eye and light perception left eye. Right eye was congested with endothelial dusting. Bleb was seen superiorly which was avascular, thin walled with surrounding congested conjunctiva, giving it a white on red appearance. There was no leak over the bleb on Seidal's test. Anterior chamber depth was normal with moderate reaction and hypopyon of 1mm. Pupil was round with sluggish reaction and fibrinous exudate was covering the pupil. Fundus evaluation showed faintly visible disc due to media haze. The intraocular pressure (IOP) was 18 mm of Hg. The ultrasonography B scan showed echo-dense shadows in anterior vitreous, posterior vitreous was comparatively clear. According to history and clinical finding, provisional diagnosis of Bleb infection with minimal vitreous involvement was made. Conjunctival swab, aqueous fluid and vitreous fluid were sent for culture sensitivity. On the same setting, intravitreal antibiotics (Vancomycin 1mg/0.1ml, Ceftazidime 2.22mg/0.1ml) along with steroid (Dexamethasone 400mcg/0.1ml) were given. He was started with topical fortified Cephazoline 1hrly, Homatropine three times and Tab Ciprofloxacine 750 mg two times. Vitreous tap and aqueous tap did not show any growth but conjunctival swab showed growth of Staph. Aureus sensitive to antibiotic patient was receiving.

One the fourth day, intra vitreal injection was repeated, as there was not significant improvement. Gradual improvement was noted following that. On 14th day, his visual acuity improved to 6/12, eye bleb was looking healthy, there was no congestion around the bleb, anterior chamber reaction was minimal, vitreous reacting was decreased remarkably. Retinal details could be seen, which showed CDR ratio of 0.7:1 with superior notch in neuroretinal rim. The IOP was 14mm of Hg. Topical medications were continued for next 10 days.

Figure 1: One-eyed patient with right eye blebitis.

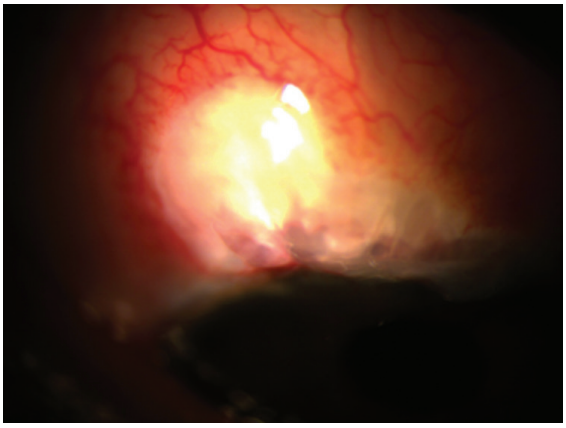

Figure 2: Congestion around the bleb which was thin walled and pale.

Figure 3: Seidal test negative at the bleb.

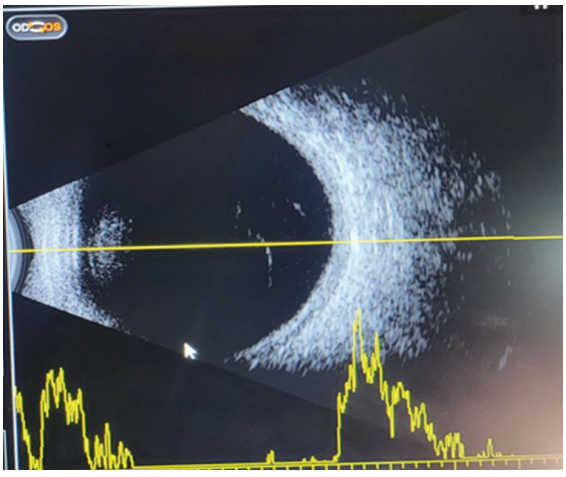

Figure 4: Anterior vitreous showing hyper-echoic shadow.

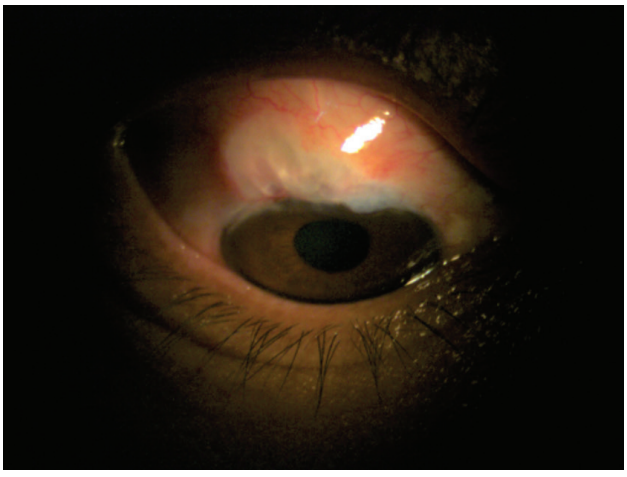

Figure 5: Healthy bleb after treatment.

DISCUSSION

Bleb-related infection is not very common but is a sight threatening complication of various types of glaucoma surgery like filtration surgery, glaucoma drainage device, filtration with collagen implant and minimally invasive glaucoma surgery as well. Use of anti metabolities during surgery is the main risk facotor for bleb infections. Other risk factors includes bleb manipulation, inferior blebs, patients decreased immune status and local infections like blepheritis. Bleb infection can be very aggressive with poor prognosis. Incidence of bleb-related endophthalmitis has gradually decreased as concentration and exposure time of antimetabolitis have considerably reduced.

A single-centre retrospective review from the 1990s showed that the fiie years risk of blebitis is 6.3% and that of BRE is 7.5% (DeBry et al., 2002). A prospectve multicentre Japanese study reported a prospectively determined cumulative probability of bleb- related infections to be 2.2% at 5 years (Yamamoto et al., 2014). In recent studies in United States (US) showed blebitis is 0.55% and BRE 0.45 -1.3% (Vaziri et al., 2015).

Adjunctive use of anti-fibrotic agents improves bleb function but it also increases the risk of bleb infection. Bleb morphology is also an important factor leading to infection. Thin walled avascular, poly cystic bleb are also considered as risk factor. Bleb-related infection can be classified as blebitis when the infection is localised over the bleb only. When infection is spreading to vitreous it is called as Bleb-related endophthalmitis. This is a form where patient might present as endophthalmitis and should be treated urgently (Yassin, 2016).

Early onset bleb infection occurs if infection is within 1 month of surgery and late onset is when infection is seen after 1 month. Early onset bleb-related infections respond to treatment better than late unset infections.

Blebitis presents with pain, decreased vision and redness with classical white and red appearance where bleb looks pale with congestion of surrounding conjunctiva. Anterior chamber might have variable reaction and vitreous involvement at times. Patient with blebitis might present with hypotony, endophthalmitis, leakage and pain which is called as HELP syndrome (Allingham et al., 2011).

Bleb-related infections are mainly due to gram positive bacteria like Staphylococcus and Streptococcus species are most commonly encountered. (Niu et al, 2024)and to compare them with the clinical course during the coronavirus disease (COVID-19.

Late onset bleb infection usually occur due to Gram negative bacteria such as Haemophilus Influenzae, Pseudomonas and Enterococcus (Busbee et al., 2004).

Treatment should be started as soon as diagnosis is suspected, as delayed treatment can lead to sight threatening complication. For localised bleb infecting intensive topical drops can control the infection. Bleb infection with mild to moderate vitreous involvement topical

antibiotics along with intra-vitreal injections are needed. When it is associated sever vitreous involvement, early vitrectomy with topical as well as intra-vitreal antibiotics is the treatment of choice.

Topical antibiotics should include combination of antibiotics against both gram positive and gram negative bacteria like fortified aminoglycoside or cetazidime with vancomycin. Moxifloxacin in recent years are the most effective fluoroquinolone of choice which covers both gram positive and negative bacteria and it has added advantage of higher intraocular penetration (Robertson et al., 2005). Antibiotics should be changed according to sensitivity of the micro-organisms.

Sub conjunctival injections has a limited role, as its therapeutic level in vitreous might not be achieved. Combination of topical and oral antibiotics along with steroid can control the infection.

CONCLUSION

Localised bleb infection can lead to devastating consequences as fulminant endophthalmitis. Patients who has undergone filtration surgery should be on regular follow up as late onset bleb infection can occur any time. Early and aggressive treatment is recommended in any form of bleb-related infections to save the sight.

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