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Short Communication

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Emerging culprit of post-operative cluster endophthalmitis in Eastern India: *Acinetobacter baumannii*

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Abstract

Purpose: To report clinical profile, etiology, management, outcomes and drug sensitivity in *Acinetobacter baumannii* cluster endophthalmitis.

Methods: Four post-surgical cases presented to a tertiary care hospital in eastern India 5 days after manual small incision cataract surgery - two were diabetic with unilateral panophthalmitis and no light perception and two had no systemic diseases, unilateral endophthalmitis with perception of light only. All cases underwent immediate core vitrectomy with intravitreal antibiotics followed by repeat intravitreal antibiotics and anterior chamber wash.

Results: *A. baumannii* sensitive to amikacin was isolated from vitreous in all cases. One patient achieved vision of 6/60, while one patient retained 1/60 vision with clear media and attached retina at final visit. Two eyes with panophthalmitis ended up with phthisis bulbi.

Conclusion: *A. baumannii* is a very rare cause of common source endophthalmitis with poor visual and anatomical outcomes. Prevention through rigorous pre-operative preparation cannot be overemphasized

Key words: vision loss, epidemic, intraocular surgery, vitrectomy, endophthalmitis

Introduction

Endophthalmitis is a serious and vision-threatening complication encountered after intraocular surgery (1,2). Up to 90% of all endophthalmitis cases worldwide occur after cataract surgery, as it is the most common surgery performed worldwide. Gram-positive organisms account for 90% or more of pathogens isolated, of which the majority (70%) are coagulase-negative staphylococci, followed by *Staphylococcus aureus* (10%), and *Streptococci* spp. (9%) (1,3-5).

Post-operative endophthalmitis has an overall incidence of 0.01-0.367% in Indian studies, which have identified either bacteria or fungi in varying proportions to be responsible for the same (2-5). A recent study from Central India reported the occurrence of *Aspergillus fumigatus* in 46.43%, Gram positive cocci in 40.6% (including *Staphylococcus epidermidis* and *S. aureus*) and Gram negative *Klebsiella pneumoniae* in 2.4% of cases (3).

Recent series have shown emergence of various atypical bacteria and fungi as important causes of post-operative endophthalmitis (4,5). One among these, *Acinetobacter baumannii*, are nonmotile, oxidase negative, gram-negative bacilli belonging to the family *Moraxellaceae*. They usually cause infections involving skin, soft

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tissue, and bone, and have been increasingly reported as a cause of community-acquired infections, however endophthalmitis due to this organism has been rarely reported (6).

We hereby report the clinical profile, etiology, management, outcomes and drug sensitivity in *Acinetobacter baumannii* endophthalmitis encountered in our institution following manual small incision cataract surgery (MSICS) with intraocular lens implantation done elsewhere.

Case descriptions

Three males and one female presented to our tertiary care institution with pain, redness, and watering associated with loss of vision in the operated eyes after intraocular surgery five days back. Presenting features of the cases are summarized in Table 1. The clinical features at presentation are shown in Figure 1.

Table 1: Presenting features of the four cases

	CASE 1	CASE 2	CASE 3	CASE 4
VA in operated eye	No PL	No PL	PL+, PR Inaccurate	PL+, PR Inaccurate
VA in other eye	FCCF	2/60	6/24	6/18
IOP in operated eye	22	23	25	20
IOP in normal eye	17	19	24	18
Anterior segment in operated eye	Lid edema, diffuse conjunctival congestion, corneal abscess, total hypopyon, pus coming out of scleral tunnel	Diffuse conjunctival congestion, corneal abscess, total hypopyon, pus coming out of scleral tunnel	Conjunctival congestion, striate keratopathy++, Cells 4+, Hypopyon 2.5 mm, FM+, 3 mm dilation	Conjunctival congestion, striate keratopathy+, Cells 4+, Streak hypopyon, FM+ 4 mm dilation
Anterior segment in normal eye	WNL	WNL	WNL	WNL
Lens in operated eye	Aphakia	PCIOL	PCIOL	Aphakia
Lens in other eye	Clear	IMSC	IMSC	IMSC
Fundus in operated eye/ B-scan findings	No view – vitreous echoes	No view – vitreous echoes	No view – vitreous echoes	No view – vitreous echoes
Fundus in normal eye	PDR	WNL	WNL	WNL
Systemic issue	Uncontrolled DM/HTN	Uncontrolled DM /HTN	Nil	Nil

DM=diabetes mellitus, FM=Fibrin membrane, HTN=hypertension, IMSC=immature senile cataract, IOP= Intraocular pressure, PC-IOL=posterior chamber intraocular lens, PL=Perception of light, PDR=Proliferative diabetic retinopathy, PR=Projection of rays, VA=Visual acuity, WNL=within normal limits

Figure 1. Presenting features of the four cases (Table 1)

All the cases were identified as having post-surgical infective endophthalmitis (with two of them complicated to panophthalmitis). All of them were taken up for surgical intervention, the details of which are summarized in Table 2. Vitreous tap of the cases were taken and shown in Figure 2.

Table 2: Surgical intervention in the four cases

	CASE 1	CASE 2	CASE 3	CASE 4
Primary Surgery	SICS + PCIOL f/b IOL explantation next day	SICS + PCIOL	SICS + PCIOL	ACIOL f/b IOL explantation next day (SICS with aphakia done 1 month back)
Diagnosis	Panophthalmitis	Panophthalmitis	Endophthalmitis	Endophthalmitis
Initial Treatment	Core vitrectomy + Vitreous tap + AC tap + IVA (VCD)	Core vitrectomy + Vitreous tap + AC tap + IVA (VCD) + IOL explantation	Core vitrectomy + Vitreous tap + AC tap + IVA (VCD) + IOL explantation	Core vitrectomy + Vitreous tap +AC tap + IVA (VCD)
Culture	*A. baumannii*	*A. baumannii*	*A. baumannii*	*A. baumannii*
Sensitivity	Amikacin sensitive	Amikacin sensitive	Amikacin sensitive	Amikacin sensitive
Subsequent Intervention	Nil	Nil	IVA (VCD) f/b IVA (Amikacin+ CD) f/b AC wash + IVA (CD)	IVA (VCD) f/b AC wash + IVA (CD)
Advice at discharge	E/d Moxi/Amika /Cmc /Atrop	E/d Moxi/Amika /Cmc/Atrop	E/d Moxi/Amika /Cmc/Atrop/Pred	E/d Moxi/Amika /Cmc/Atrop/Pred

AC=anterior chamber; E/d=eye drops; f/b=followed by; IOL=intraocular lens; IVA= intravitreal antibiotics, VCD=Vancomycin (1.0 mg/0.1 mL), Ceftazidime (2.25 mg/0.1 mL), Dexamethasone (0.4 mg/0.1ml); Moxi= Moxifloxacin 0.5%, Amika=Amikacin 1%, Cmc=Carboxymethylcellulose 0.5%, Atrop= Atropine 1%, Pred=Prednisolone 1%; SICS=Small Incision Cataract Surgery

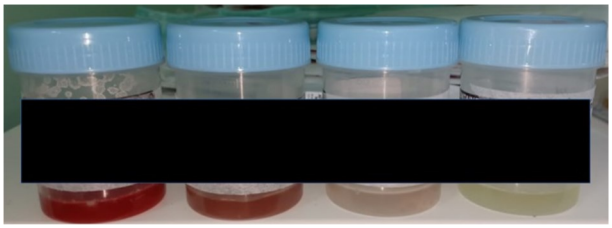

Figure 2. Vitreous tap of the four cases (Table 2)

In all cases, *Acinetobacter baumannii*, most sensitive to amikacin, was cultured from the vitreous tap (Figure 3). The two cases of endophthalmitis underwent repeat intravitreal antibiotics including amikacin; in Case 3, this was administered intravitreally in the dose of 200µg/0.05ml. Two cases of panophthalmitis were not intervened owing to explained nil visual prognosis. All cases were discharged 3 days after core vitrectomy on hourly topical antibiotics and steroids, with guarded visual prognosis explained.

At subsequent follow-up, the vision of two eyes with panophthalmitis remained PL negative, while Case 3 had 1/60 vision and Case 4 6/60. The clinical findings at the first follow-up visit one week after discharge are shown in Figure 4.

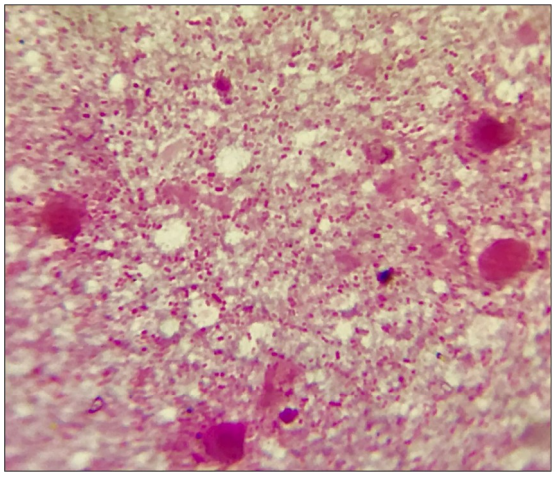

Figure 3. Gram negative coccobacilli seen on smear examination, further identified to be *Acinetobacter baumannii*

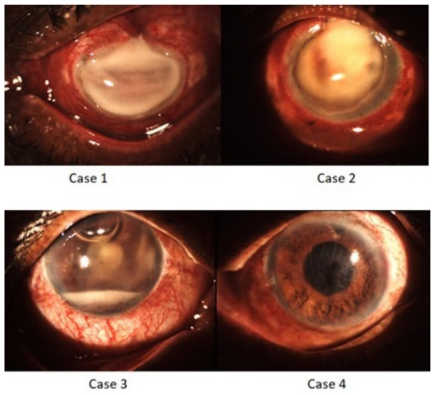

Figure 4. Clinical findings of the eyes at 1 week follow-up (Cases 1 and 2: Corneal melting; Case 3: Reduced ciliary congestion and improved fundal glow; Case 4: Reduced ciliary congestion, clearing cornea, improved fundal glow)

Cases 1 and 2 ended up with phthisis bulbi. The contralateral eye of Case 1 underwent pan-retinal photocoagulation with glycemic control with guarded visual prognosis explained, and the contralateral eyes of the other three cases were operated by phacoemulsification with PCIOL, with good visual outcome.

Discussion:

The case series summarized clinical findings and management in an epidemic of endophthalmitis caused by an atypical organism, Acinetobacter, which itself is not commonly reported in the literature, and the occurrence of its species *A. baumannii* is even rarer. Parvaresh et al. reported a case of endophthalmitis by this organism which was found sensitive to colistin (8). Bitirgen et al have also reported one such case which had to undergo vitrectomy 10 days after cataract surgery but had a good visual outcome (9).

Only one case series of four cases from Eastern India was found in the literature, which was reported in 2009-2011 by Roy et al. (6). In this series, all the organisms were sensitive to ciprofloxacin and resistant to ceftazidime. Based on their findings, they commented that ciprofloxacin should be considered as a first-line antibiotic in *A. baumannii* endophthalmitis. However, our isolates show a different pattern of antibiotic sensitivity. This needs close epidemiologic monitoring. In retrospect, our initial choice of antibiotic may have been appropriate as corroborated by the findings of Feng et al.(10).

Administration of dexamethasone was also appropriate based on the findings by Moisseiev et al.(11). But the occurrence of this atypical organism in our isolates implies that *Acinetobacter baumannii* is an emerging culprit of post-operative cluster endophthalmitis in Eastern India wherein amikacin should now be considered a first-line drug in addition to ciprofloxacin. Previous reports of *A. baumannii* endophthalmitis have shown low sensitivity to amikacin (12). However, the isolates in our cases were sensitive to Amikacin, which was continued as topical eye drops leading to a good clinical response. The intravitreal administration of amikacin may result in macular infarction in the traditional dose (400µg/0.1ml). In Case 3, the fulminant nature of the infection and poor visual prognosis led us to administer 200µg of amikacin intravitreally (13).

In addition, two of our patients had uncontrolled diabetes and hypertension at presentation. Hence, the role of glycemic control for the prevention of endophthalmitis and thorough pre-operative preparation cannot be overemphasized. A subgroup analysis of the "Endophthalmitis Vitrectomy Study" showed that endophthalmitis in diabetic patients should be managed more

aggressively with vitrectomy recommended regardless of presenting visual acuity (14). Our patients presented five days after intraocular surgery, and we also presume that this delay is also responsible for the progression of the disease leading to poor outcomes in our cases.

Conclusion:

A. baumannii is a very rare cause of common source endophthalmitis with poor visual and anatomical outcomes. It is an emerging culprit of post-operative cluster endophthalmitis in Eastern India, which needs close epidemiologic monitoring.

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