Comparative study of clinical features and visual outcome in traumatic and non-traumatic aetiologies in Tertiary Eye Care Center of Western India

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ABSTRACT

Purpose: The epidemiological, clinical, and microbiological profiles of patients with infectious endophthalmitis comparing the traumatic and non-traumatic etiologies presented to a Tertiary Eye Care Center in the rural tribal areas of Gujarat.

Methods: A retrospective review of the electronic medical records of 114 patients between January 2008 and December 2019 was carried out. All patients were diagnosed with clinical endophthalmitis, treated with Endophthalmitis Vitrectomy Study first intravitreal injection, and then undergone pars plana vitrectomy with intraocular antibiotics

Results: 61/114(53.5%) patients had non-traumatic postoperative (PO) and 53/114 (46.3%) had posttraumatic (PT) endophthalmitis. Males were predominant in all types of endophthalmitis. Significantly younger individuals constituted the PT group. Best-corrected visual acuity (BCVA) at presentation was <1/60 in the majority (94.2%) of patients, while the treatment outcome was variable in the etiology with respect to BCVA that improved to 6/60 in 27 (23.68%) eyes and >6/24 in 17 (15.7%) eyes. In addition, 23 (20.2%) did not have any perception of light, and no significant change was detected in the visual outcome (p=0.278) according to etiologies.

Conclusion: Infectious endophthalmitis is a rare but serious sight-threatening complication. Aggressive and prompt treatment causes significant improvement in vision. Etiology does not have a significant impact on the outcome of EVS in PT cases.

Keywords: endophthalmitis, etiology, postsurgical, posttraumatic.

INTRODUCTION

Endophthalmitis complicating open globe ocular injury has a worse visual prognosis than postsurgical endophthalmitis[1-3]. Several factors, such as the virulence of the infecting organisms, the severity of any associated ocular trauma, the rapidity of diagnosis, and the institution of appropriate therapy, might be ascribed to the differences in final visual acuities between the groups. Intravitreal antibiotics and vitrectomy have improved the success rates of experimental and clinical endophthalmitis treatment in selected cases. In order to identify the factors affecting the prognosis of traumatic *vs*. postoperative (PO) endophthalmitis, we retrospectively reviewed 50 cases of exogenous endophthalmitis[3-6].

METHODS

The Institutional Review Board (IRB) of Drashti Netralaya approved this study prior to data collection and waived the need for informed consent. The protocol adhered to the tenets of the Declaration of Helsinki. Subsequently, a retrospective review of all cases between January 2008 and December 2019 was conducted. The inclusion criteria were diagnosis and management of endophthalmitis during the study period with a minimum follow-up duration of 30 days.

The present study included cases of exogenous endophthalmitis presented to the Drashti Netralaya (Dahod, Gujarat) between January 2008 and December 2019. The criteria for clinical exogenous endophthalmitis were as follows: a history of traumatic or surgical ocular injury; clinical diagnosis based on the clinical symptoms, such as ocular pain; decreased visual acuity; conjunctival chemosis and hyperemia; anterior chamber or intravitreal inflammation.

At our institution, according to the EVS guidelines, vitrectomy and intravitreal antibiotics were added to the treatment regimens of selected cases. These typically included eyes

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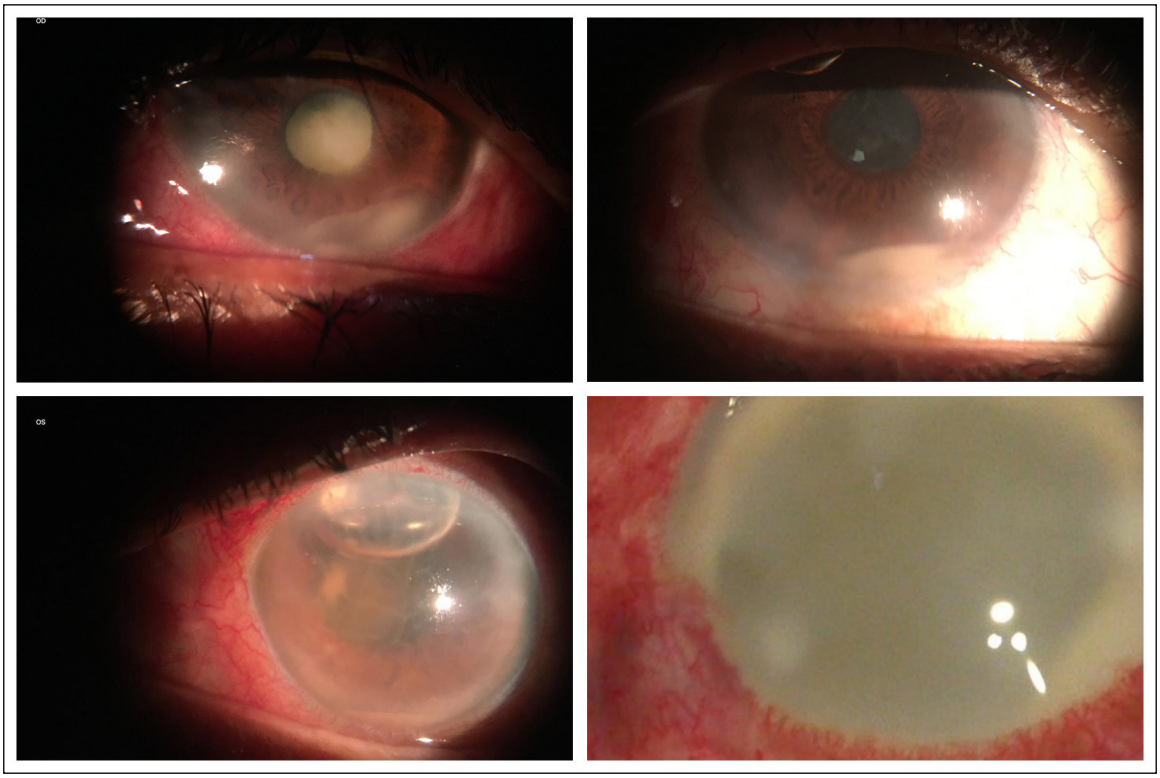

Figure: *post-operative*

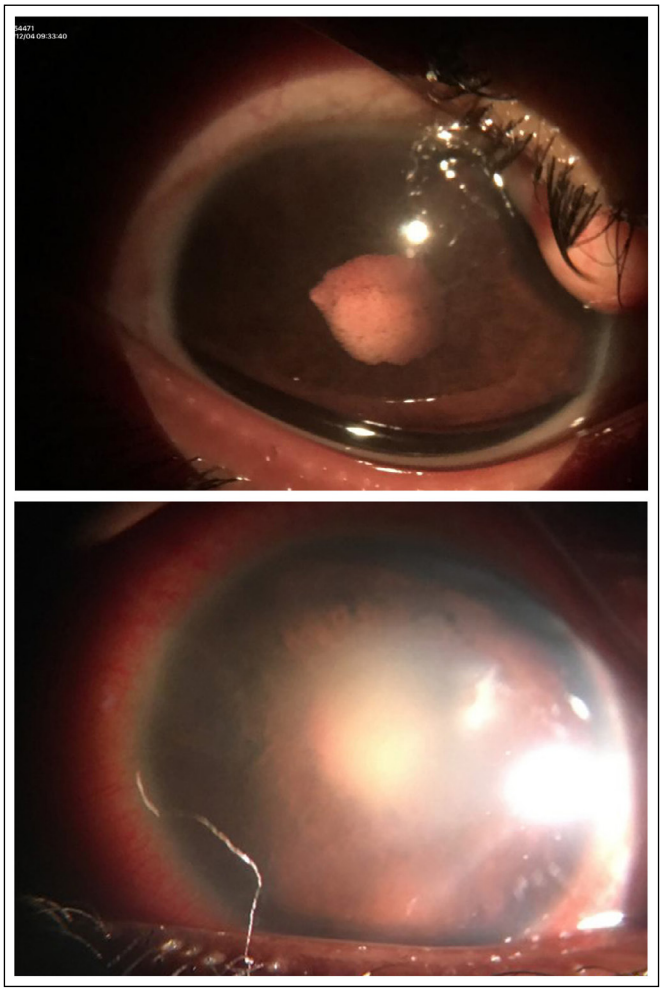

Figure: *traumatic-endo*

with poor visual acuity (perception or no perception, 7 hand motions, and worse), while advanced vitreous inflammation indicative of infection was treated with vitrectomy and intravitreal antibiotics. In most instances, vancomycin and ceftazidime were administered intravitreally. Also, B scan ultrasonography was performed routinely to monitor endophthalmitis and in planning for potential vitrectomy. Patients with Painful and totally blind eyes underwent primary enucleation/evisceration. "Success" was defined as visual acuity of ≥3/60.

RESULTS

53/114 (46.6%) cases occurred after trauma, and 56 (49.1%) occurred after ocular surgery. The cohort consisted of 64/114 (56.1%) males and 41/114 (35.6%) females, with a mean age of 45.44±20.8 (range: 1–84)-years-old. Overall, 26/114 (22.8%) patients achieved successful final visual acuities ("success" was defined as visual acuity of ≥3/60), and 13/114 (11.4%) achieved >6/24.

While investigating the visual outcome, we found a significant difference between pre- and post-treatment (p=0.000).

A comparative study of visual outcome amongst traumatic and non-traumatic causes did not show any significant difference (p=0.278, Table 2). In this study, the overall success rate was 27.2% in cases of exogenous endophthalmitis:

22.7% posttraumatic (PT) and 32.1% for PO cases.

DISCUSSION

In this study, we reviewed 114 consecutive cases of exogenous endophthalmitis presented between 2008 and 2019. The cases treated with endophthalmitis vitrectomy had better visual outcomes than only medical treatment.

According to EVS guidelines, vitrectomy and IOAB administration appear to be rational therapeutic choices in selected cases with severe vitreal involvement irrespective of the etiology. The overall success rate was 27.2% in cases of exogenous endophthalmitis treated after 1977 is similar to the recently reported case series (2 7).

The success rates in the treatment of PT endophthalmitis vary greatly from 17% to 83% in our series. Moreover, we noted a success rate of 32.1% in 53 cases of PT endophthalmitis (1, 8-12) and 43% for 14 cases of PT endophthalmitis treated with vitrectomy and IOABs. Numerous prognostic factors may affect the visual outcome in cases of PT endophthalmitis, including the severity of initial trauma, the interval between trauma and treatment, and virulence of the infecting organisms. These factors may account for the wide range of visual outcomes among reported series. In contrast, the success rates in cases of PO endophthalmitis only slightly between recently reported series (2, 4, and 7). Typically, these patients had undergone primary anterior segment operations and were examined frequently in the PO period. Our success rate was 32.1% in cases of PO endophthalmitis treated with vitrectomy and IOABs. Also, no significant difference was observed amongst patients with PO and PT endophthalmitis (Tables 1 and 2).

Table 1: *Comparative study of Traumatic and non traumatic infections endophthalmitis.*

VARIABLE	POST OPERATIVE		POST TRAUMATIC		TOTAL	
	NO	%	NO	%	NO	%
DEMOGRAPHY						
NO	56	49.1	53	46.6	109	100
AGE MEDIAN	60	--	30	--	53.5	
FEMALE	20	35.7	21	39.6	44	38.6
MALE	36	64.3	32	60.4	70	61.4
PEDIATRIC	2	3.6	18	34	21	18.4
INTERVAL EVENT AND PRESENTATION(MEDIAN(	6	--	4	--	6	---
INTERVAL EVENT AND INTERVENTION (MEDIAN)	6.5	--	8	--	10	---
TREATMENT						
MEDICAL TREATMENT	26	46.4	12	22.6	40	35.1
NUMBER OF INJECTIONS(MEDIAN)	1	--	1	--	1	--
NUMBER OF SURGERIES(MEDIAN)	1	--	3	--	1	--
SURGICAL TREATMENT	30	53.6	41	77.4	74	64.9
DESTRUCTIVE PROCEDURE	2	3.8	0	9	2	0.01
PRE TREATMENT VISION						
NOPL#	2	3.6	6	11.3	10	8.8
<1/60	50	89.3	44	83	107	93.9
>6/60	2	3.6	1	1.6	3	2.7
>6/24	1	1.8	0	0	2	1.8
POST TREATMENT VISION						
NOPL#	11	19.6	7	13.2	23	20.2
<1/60	10	17.9	18	34	51	44.7
>6/60	17	30.3	9	13.2	27	23.7
>6/24	7	12.5	6	11.3	17	14.9
LF*	14	25	11	20.8	16	14

NOPL- NO LIGHT PERCEPTION,* LF-LOST FOLLOW UP

Table 2: *Comparative study of visual outcome in traumatic and non traumatic categories.*

Vision Categories	CATEGORIES		Total
	Traumatic	Non-Traumatic	
NOPL#	7	10	17
<1/60	29	21	50
1/60-3/60	8	8	16
6/60-6/36	2	4	6
6/24/6/18	2	5	7
6/12-6/9	0	2	2
LF*	5	11	16
TOTAL	53	61	114

P=0.278

NOPL- NO Light Perception, * LF-Lost Follow UP

The less visual outcome in the previous study could be attributed to comorbidity (1), which was observed in our study. In addition to the direct and delayed effects of the ocular trauma, the poor visual prognosis in the PT group may be accounted for by the fact that these patients tended to wait longer before seeking treatment than those with PO endophthalmitis. Furthermore, the PT infections could have been caused by multiple organisms. Rowsey et al. (7) observed that mixed infections occurred more frequently in PT than PO cases of endophthalmitis. Some studies also suggested that the combination of organisms may cause more visual loss than a single species (13-16).

Conclusion: Infectious endophthalmitis is rare but severe sight-threatening complication following trauma or surgery. The aggressive and prompt treatment causes a significant improvement in vision but Aetiology does not have a significant impact on the outcome of EVS findings in PT cases.

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