Clinical profile and visual outcome in cluster endophthalmitis following cataract surgery in Central India

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The purpose of this study was to determine clinical presentation, microbiological spectrum and visual outcome of cluster endophthalmitis patients after cataract surgery in central India.

The records of cluster endophthalmitis patients were retrospectively reviewed. Three clusters of patients were identified who had undergone vitreous biopsy followed by three-port pars plana vitrectomy with intraocular antibiotics and steroids. Good visual outcome was seen in eight (33%) of 24 patients. Six patients who had undergone vitreous biopsy followed by three-port pars plana vitrectomy with intraocular antibiotics and steroids. Good visual outcome was seen in eight (33%) of 24 patients. Six patients who had undergone vitreous biopsy followed by three-port pars plana vitrectomy with intraocular antibiotics and steroids. Good visual outcome was seen in eight (33%) of 24 patients.

Key words: Cluster, endophthalmitis, pseudomonas, postoperative

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Postoperative endophthalmitis is a serious and devastating complication after ophthalmic surgery.1 The incidence of endophthalmitis has decreased during the past several decades, this decline in incidence is due to improved surgical techniques, improved sterilization methods and better postoperative care and use of broad-spectrum antibiotics.2 In spite of optimum precautions taken during ocular surgery, a cluster of cases of endophthalmitis can occur a cluster of cases of endophthalmitis can occur a cluster of cases of endophthalmitis can occur.3 There are numerous reports4 on postoperative endophthalmitis but no report on cluster endophthalmitis patients after cataract surgery from central India where camp cataract surgeries are widely prevalent. This study addresses the clinical profile and visual outcome in these patients.

Materials and Methods

A retrospective review of charts of cluster endophthalmitis patients was done from February 2005 to February 2006 from the endophthalmitis registry which were referred to our center. Cluster endophthalmitis was defined as five or more cases of endophthalmitis occurring on a particular day in a single operating room in one center.

A total of three clusters were identified during the study (A, B and C). Two clusters comprised of nine patients each and one cluster had six patients. Detailed clinical history, clinical features at presentation and types of surgical procedure performed were recorded. Ultrasonography was done when there was no view of the fundus to assess the extent and location of vitreous involvement and to detect retinal detachment and choroidal detachment.

Undiluted vitreous biopsy samples were collected at the beginning of vitreous surgery in all cases for microbiological evaluation. Good visual outcome was defined as visual acuity of 20/400 or better at final follow-up.

Results

There were total 24 patients in three clusters. Nine patients were males and 15 patients were females. The age ranged from 35 to 75 years (mean 60.1 years). Pain, blurred vision and hypopyon with vitritis were the common signs and symptoms of the patients on first presentation. Duration of symptoms ranged from two to nine days after cataract surgery. Fifty per cent patients presented within four days of surgery. One patient had diabetes two patients were old leprotics.
Small incision cataract surgery (SICS) was performed in 13 (54%) patients and extracapsular cataract extraction (ECCE) in 11 (46%) of 24 patients with intraocular lens implantation. The time of presentation varied from two to nine days after cataract surgery (mean 3.67 ± 1.58 days, median three days). At presentation only one patient had visual acuity more than 20/400 whereas the remaining 23 patients had visual acuity worse than 20/400. Corneal infiltration was seen in six (25%) of 24 patients and hypopyon in 15 (63%) of 24 patients on presentation. No patient had retinal detachment or choroidal detachment at the time of presentation on standardized echography. All patients had received preoperatively topical ciprofloxacin 0.3% and betamethasone 0.1% hourly and atropine 1% three times a day. Pars plana vitrectomy with intraocular antibiotics and steroids was performed in all the patients of the three clusters. Intravitreal antibiotics were a combination of vancomycin (1 mg/0.1 ml), amikacin (0.4 mg/0.1 ml) and dexamethasone (0.4 mg/0.1 ml). The duration of follow-up ranged from six to 36 weeks (mean 11 ± 4.9 weeks). Good visual outcome was seen in five out of nine patients in Cluster A, whereas three out of only 15 patients in Cluster B and C had good visual outcome. Presence of corneal infiltrate was seen in six patients in Cluster B, whereas it was nil in Cluster A. Two eyes underwent repeat surgical intervention due to persistence of infection and vitreous exudation. In eight eyes the poor visual outcome was associated with corneal scarring and decompensation due to corneal infiltration and severe anterior chamber exudation at the time of presentation. Among the eyes with poor visual outcome five eyes had postoperative hypotony (one had phthisis bulbii, four had atrophic bulbii) and three eyes had severe vitreous exudation and opacities. The smears were positive for gram-negative bacteria in 14 (58%) vitreous samples and cultures grew *Pseudomonas aeruginosa* in 10 (42%) of 24 samples, the remaining 10 smears did not show any micro-organism. *Pseudomonas* species were sensitive to amikacin in seven samples, ciprofloxacin in seven samples and resistant to vancomycin in all samples. There was significant association ($P < 0.001$) between presenting vision of <20/400 and growth in vitreous culture ($P = 0.006$) with poor visual outcome. The association between type of surgery ($P = 0.6$), duration of symptoms ($P = 0.64$) and corneal infiltration ($P = 0.06$) with visual outcome was not significant.

**Discussion**

The most dreaded complication of any intraocular surgery is the development of endophthalmitis. The incidence of post cataract surgery endophthalmitis in the Indian scenario is 0.05%.$^5$ In our series eight of 24 patients had good visual outcome after appropriate intervention. Our results show that a positive culture and poor initial visual acuity are risk factors for decreased final visual acuity which is in agreement with endophthalmitis vitrectomy study.$^5$ In a retrospective study by Charles et al.$^7$ in which they have analyzed visual outcomes for *pseudomonas* endophthalmitis, 18 (64%) of 28 eyes were either eviscerated or enucleated. Results of *pseudomonas* endophthalmitis outbreak after cataract surgery are poor as reported by Arsan et al.$^8$ and only one patient out of four retained visual acuity of 20/200.

Postoperative outbreaks have been described in association with internal fluid pathways of a phacoemulsifier$^1$ and with contaminated intraocular irrigating solutions$^8$ with a poor visual outcome despite vitreous surgery and intravitreal antibiotics to which isolates were sensitive. In an Indian setup postoperative infections commonly occur in clusters and gram-negative infections$^10$ and fungi are common pathogens isolated in cluster endophthalmitis patients. The microbiology is suggestive of contaminated irrigating solutions as the culprit in causing such outbreaks.

Our study was limited by a short follow-up of six weeks as most of the patients were inhabitants of remote tribal interiors of the state. Defects in sterilization, contaminated irrigating solutions, viscoelastics, improper ventilation system, poor operation room hygiene and hospital construction activity are various factors responsible for cluster postoperative endophthalmitis. Source of infection could not be evaluated in our series as the patients were referred from different distant hospitals where microbiological facilities were lacking.

In high-volume cataract surgery, epidemic of endophthalmitis is always possible; we should remain vigilant and follow standardized surgical protocols and sterilization measures even in camp surgeries. Prompt adequate and aggressive treatment by vitreous surgery and intraocular antibiotics may lead to favorable results.

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