ORIGINAL
PROF-1674

CATARACT SURGERY

RETROSPECTIVE ANALYSIS OF CASES OF ACUTE ENDOPHTHALMITIS AFTER SURGERY

DR. MUHAMMAD MUMTAZ CHAUDHRY
Assistant Professor Wah Medical College
Visiting Consultant P.O.F. Hospital Wah Cantt
Rawalpindi

DR. MUHAMMAD MUBASHAR JALIS
Assistant Professor (Ophthalmology)
Islamabad Medical and Dental College,
Islamabad

PROFESSOR AFZAL KHAN NIAZI
Professor of Ophthalmology
Wah Medical College
P.O.F Hospital Wah Cantt,
Rawalpindi

ABSTRACT... Purpose of study: To find out the prevalence and visual outcome of acute endophthalmitis after cataract surgery. **Study Design:** Retrospective. **Period:** 1st January 2001 to 31st December 2009. **Setting:** Wah Medical College, P.O.F. Hospital Wah Cantt, Rawalpindi. **Materials and methods:** Fifty cases of acute endophthalmitis who had undergone treatment. Each case of acute endophthalmitis was evaluated in terms of presentation, detailed examination, treatment and outcome. Microbiological culture of the vitreous aspirates was also done to identify the causative organism. The analysis was also meant to identify the prognostic factors of visual outcome of these cases. **Results:** Fifty patients presented with acute endophthalmitis out of the fifteen thousand cataract surgeries performed during the 9 year period. The incidence of endophthalmitis was 0.33% (95 % CI). A vitreous biopsy with intravitreal injection of antibiotics was done in all the cases presenting with acute endophthalmitis. Decreased visual acuity (90%) and pain (75%) were the main presenting features in these cases.. There were 36 (72%) culture positive cases, with staphylococci (50%) being the most common organism found. Vitreous biopsy yielded positive results in 36 (72%) patients while negative results with no microbial growth was found in 14(28%) patients. There were 20 (40%) growths of coagulase negative staphylococci, 5 (10%) growths of streptococci, 8 (16%) growths of coagulase positive staphylococci, and 3 (6%) of gram negative organisms. The final visual outcome was recorded after one month. 8 (16%) patients achieved 6/12 or better, 26 (52%) patients achieved moderately good visual acuity 6/60 to 6/12, while 16 (32%) patients achieved poor visual acuity of less than 6/60. Of the latter group who had poor visual acuity, 2 (4%) patients had only perception of light while 1 (2%) patient had no perception of light and 1 (2%) patient had blind and painful eye who had to undergo evisceration. 6 (16%) patients achieved 6/12 or better visual acuity. **Conclusions:** The incidence of endophthalmitis is consistent with other studies. Laboratory diagnosis of the vitreous aspirates helps in the treatment. Achieving a good visual outcome is possible with treatment of the cases of acute endophthalmitis.

Key words: Cataract, Endophthalmitis, Visual acuity

INTRODUCTION

Endophthalmitis still remains as one of the nightmares of the ophthalmic surgeon. The pseudophakic patient presenting with decreased vision and pain in the eyeball scares the hell out of the ophthalmic surgeon. Although advances in cataract surgery from extracapsular cataract surgery to phacoemulsification has improved the outcome of the procedure but post operative endophthalmitis remains one of the most visually devastating complications of cataract surgery. Smaller incisions and the implantation of foldable lenses have lowered the incidence of endophthalmitis[1].

EDO eye hospital has been keeping the record of the patients of endophthalmitis over the 9 year period. Early identification of the complications helps in the prognosis of the case. That is why the clinicians should be aware of the signs and symptoms which are most commonly manifested in endophthalmitis. Similarly the different therapies for treatment are available which have to be evaluated. The final outcome also depends on the time of presentation, the severity of the clinical signs, the causative organism and the administration of appropriate treatment.

MATERIALS AND METHODS

The data at of patient's presenting with endophthalmitis was reviewed by the surgical audit team from 1st January 2001 to 31st December 2009 for identification of cases of endophthalmitis. All such cases who presented with severe intraocular inflammation were diagnosed as the cases of acute endophthalmitis. Patients with a severe intraocular inflammation after a single procedure of cataract surgery were included while the patients who had undergone other procedures along with cataract surgery were excluded. All patients had prophylactic

antibiotic eye drops and povidone iodine before the surgical procedure and postoperative antibiotic steroid eye drops. The features taken out of these accounts was the age and sex of the patient, the time of presentation, the clinical signs of presentation, the intervention done, the results of laboratory diagnosis and the final visual outcome. The final visual outcome was defined as the best corrected visual acuity achieved one month after the treatment.

The final visual outcome was recorded as good if the best corrected visual acuity was better than 6/24, fair when the best corrected visual acuity was between 6/ 24 and 6/60 and poor when the best corrected visual acuity was less than 6/60. The total number of patients undergoing cataract surgery was taken from the record to calculate the incidence of acute endophthalmitis after cataract surgery. Statistical measures of concordance for ordinal categories (spearman rho, kendall tau tab, pearsons) were used to grading the final visual outcome and identify the prognostic factors. All calculations were done using MINITAB.

RESULTS

Retrospective analysis of the cases presenting with acute endophthalmitis was done. There were twenty three males (46%) and twenty seven females (54%) with an overall mean age of 60 (SD10) years. A total fifteen thousand patients underwent cataract surgery in the nine year period out of which fifty patients (0.33%) presented with acute endophthalmitis after cataract surgery. Systemic disease was found in 19 (38%) patients out of which diabetes mellitus was present in fourteen (28%) patients. There were twenty three males (46%) and twenty seven females (54%) with an overall mean age of 60(SD10) years. Phacoemulsification was performed in 10 (20%) patients and small incision cataract surgery was performed in 40 (80%) patients. Uncomplicated surgery was performed in 42 (84%) patients while 8 (16%) patients had posterior capsule rupture with vitreous loss. The patients who had posterior capsule rupture underwent complete anterior vitrectomy. The mean time of presentation of these patients was 4.4 (SD 3) (median of 4 and range of 1-16) days. A vitreous biopsy with intravitreal injection of antibiotics was done in all the cases presenting with acute endophthalmitis.

Vitreous biopsy yielded positive results in 36 (72%) patients while negative results with no microbial growth was found in 14(28%) patients. There were 20 (40%) growths of coagulase negative staphylococci, 5 (10%) growths of streptococci, 8 (16%) growths of coagulase positive staphylococci, and 3 (6%) of gram negative organisms. The intravitreal antibiotic combination of vancomycin and ceftazidime was given to all the patients on making the diagnosis of acute endophthalmitis by the senior consultant. 15 (30%) patients with severe intraocular inflammation were also given oral steroids in addition to intense topical antibiotics and intravitreal antibiotics. 5 (10%) patients underwent vitrectomy who had severe intraocular inflammation and perception of light at presentation. The final visual outcome was recorded after one month. 8 (16%) patients achieved 6/12 or better, 26 (52%) patients achieved moderately good visual acuity 6/60 to 6/12, while 16 (32%) patients achieved poor visual acuity of less than 6/60. Of the latter group who had poor visual acuity, 2 (4%) patients had only perception of light while 1 (2%) patient had no perception of light and 1 (2%) patient had blind and painful eye who had to undergo evisceration.

Decreased visual acuity (90%) and pain (75%) were the main presenting features in these cases.

There was a correlation between poor vision at presentation and the poor visual outcome with 16 (67%) patients of moderately visual outcome and 14 (87%) patients of poor visual outcome had poor visual acuity at presentation. The culture positive patients had the better visual outcome with coagulase negative staphylococci having the best visual outcome and streptococci positive cases with poor prognosis.

DISCUSSION

As infective endophthalmitis can lead to irreversible loss of vision, extra caution should be taken in all the cases of severe postoperative intraocular inflammation and they should be diagnosed as infective endophthalmitis until proven otherwise. The incidence of infective endophthalmitis in standard ophthalmic centers is quite

low as the preoperative medication, patient compliance of the instructions, quality of medicines, environmental conditions as well as the postoperative care of the patients is of much higher standards than in Pakistan. Our incidence rate of 0.30% is relatively higher than what has been reported in studies conducted in reputed centers in Pakistan, as well as in the western countries[2-6]. There has been a case of underreporting as there is difficulty in distinguishing between inflammatory and infective endophthalmitis. Even the laboratory cultures might be negative as the conventional culture techniques do not identify all the infective organisms. We have included all such severe inflammatory cases as infective endophthalmitis as there is no clear cut demarcation in the diagnosis of such case.

The most common presenting complaints of the patients of acute infective endophthalmitis was decreased visual acuity (90%) followed by pain in the eyeball (75%). Similarly on examination decreased visual acuity (95%), vitreous haze (70%) and lid swelling (52%) were documented in the cases of acute infective endophthalmitis which is consistent with other studies conducted on acute infective endophthalmitis[3].

Microbiological profile of all the patients of acute infective endophthalmitis was done. The conventional microbiological cultures yielded positive results in 36(72%) with coagulase negative staphylococci (40%) being the most common organism found which has been consistent with other studies[4,6]. Thus there is not much variation in the microbiological organism causing acute infective endophthalmitis.

Intravitreal antibiotics were used in all the cases diagnosed to have acute postoperative endophthalmitis. The most common administered antibiotic combination was that of vancomycin and ceftazidime along the guidelines of Endophthalmitis Vitrectomy study[7]. The treatment regimen also included intensive topical antibiotics and steroids. It can be possibly argued that the cases of low grade acute endophthalmitis could be because of toxic anterior segment syndrome[8] but still we considered all cases of acute inflammation as endophthalmitis until proven otherwise. Even the BOSU (British ophthalmological surveillance unit) survey and the Endophthalmitis Vitrectomy study do not give any specific guidelines regarding the risks of intravitreal antibiotics outweighing its benefits.

Pars plana vitrectomy has become one of the modalities of treatment of acute postoperative endophthalmitis. In the early days, as the techniques and instrumentation of pars plana vitrectomy was not refined so the role of pars plana vitrectomy was not clear[9]. It was subsequently demonstrated in the Endophthalmitis Vitrectomy study that the patients presenting with vision of perception of light benefit the most with pars plana vitrectomy[6,9]. The indications for the role of pars plana vitrectomy in the management of acute postoperative endophthalmitis are evolving and its role is becoming more and more popular[10].

The presenting visual acuity is considered as an important prognostic indicator of these patients. The presenting symptoms in order of frequency were decreased visual acuity in 90% and pain in 75% of the patients. After the treatment the level of visual acuity varied among the patients. Considering 6/60 as the functional visual acuity, thirty four(68%) achieved it while sixteen (32 %) achieved less than that which is comparable with the BOSU survey in which the functional visual acuity was achieved in 66 % of the patients of acute postoperative endophthalmitis.

The prognostic factors determining the outcome of these patients showed that the initial presenting vision and the infecting organisms are important in this regard. The initial presentation with poor visual acuity like the patients presenting with perception of light even if managed actively resulted in poor visual outcome. Similarly the patients with positive cultures of streptococci resulted in poor visual outcome as compared to other infecting organisms. It is argued that the recommendations of Endophthalmitis Vitrectomy study do not apply to streptococcal infected patients[7]. Early vitrectomy is recommended for these patients irrespective of the visual acuity at presentation.

There are some limitations in the study as less number of patients were analysed and other prognostic factors were not taken into account like the presence of relative

afferent papillary defect. Being a retrospective study these limitations were bound to be there. There are ever changing trends in the management of acute postoperative endophthalmitis as this pathology poses a dilemma to the treating surgeon on an individual basis. Although visual recovery after endophthalmitis can be slow and variable current treatment strategies will result in a significant proportion of patients regaining functional vision. It is hoped that evidence based approach to prophylaxis of endophthalmitis will result in a significant reduction in the incidence of endophthalmitis

CONCLUSIONS

1. A good prophylaxis of endophthalmitis in a standard eye health care center results in a lower incidence of endophthalmitis in patients undergoing cataract surgery.
2. Decreased visual acuity, pain and swelling of the lids are ominous signs of acute postoperative endophthalmitis.
3. Poor visual acuity at presentation and streptococcal endophthalmitis have poor prognostic outcomes.
4. Early intervention in the form of intravitreal antibiotics and pars plana vitrectomy results in better visual outcome.

RECOMMENDATIONS

1. A prospective randomized controlled study should be done which will yield better and more authentic results.
2. Multicenter based studies should be done on acute postoperative endophthalmitis, results compared and recommendations made on their basis.
3. Treatment of endophthalmitis should be vigorous and prompt.
4. Intravitreal antibiotics should be administered without hesitation.
5. Vitrectomy should be considered for eyes with poor visual acuity at presentation.
6. Prophylaxis of endophthalmitis should be done.

REFERENCES

1. Desai P, Minassian DC, Reidy. National Cataract surgery survey 1997-8. **A report of the results of the clinical outcomes.** Br J Ophthalmol 1999; 83:893-6.
2. Hospital Episode Statistics online. Headline figures 2006-2007. The information centre for health and social care 20007. http://hesonline.nhs.uk/Ease/servlet /ContentServer?siteID=1937categoryID=193(accessed 20 March 2008)
3. Kamalarajah S, Silvestre G, Sharma N et al. **Surveillance of endophthalmitis following cataract surgery in the UK.** Eye 2004;18: 580-7.
4. Moltan SP, Gao A, Lockwood A, et al. **Post cataract endophthalmitis; incidence of microbial isolates in a United Kingdom region from 1996 through 2004.** J Cataract Refract Surgery 2007; 33:265-8.
5. EUROPEAN Society of Cataract and Refractive Surgeons. **ESCRS guidelines on prevention, investigation and management of post operative endophthalmitis.** Version 2. Dublin: European Society of Cataract and Refractive Surgeons; 2007.
6. Endophthalmitis Vitrectomy Study Group. **Results of the Endophthalmitis Vitrectomy Study.** Arch Ophthalmol 1995; 1113:1479-96.
7. Endophthalmitis Vitrectomy Study Group. **Microbiological factors and visual outcome in the Endophthalmitis Vitrectomy Study.** Am J Ophthalmol 1996; 122:830-48.
8. Holland SP, Morck DW, Lee TL. **Update on toxic anterior segment syndrome.** Current Opinion in Ophthalmology 2007; 18:4-8.
9. Doft BH. **Treatment of post cataract extraction endophthalmitis.** Arch Ophthalmol 2008; 1126:554-6.
10. Maguire JI. **Postoperative endophthalmitis; optimal management and role and timing of vitrectomy surgery.** Eye 2008; 22:1290-300.

Article received on: 30/06/2010 Accepted for Publication: 21/03/2011 Received after proof reading: 16/05/2011

Correspondence Address:
Dr. Muhammad Mumtaz Chaudhary
Assistant Professor and Eye Consultant
Wah Medical College
P.O.F. Wah Cantt, Rawalpindi
Rawalpindi

Article Citation:
Chaudhry MM, Jalis MM, Niazi AK. Retrospective analysis of cases of acute endophthalmitis after cataract surgery. Professional Med J Apr-Jun 2011;18(2): 295-299.

PREVIOUS RELATED STUDIES

Abdul Hameed Bhatthi, Syed Musharraf Imam, Manzoor Ahmed Faridi. Intra ocular pressure; effects of laryngeal mask airway and tracheal intubation during cataract surgery under general anaesthesia. Professional Med J Jun 2004;11(2):159-163.

Soufia Farrukh. Sub-tenon anaesthesia; an efficient and safe technique for cataract surgery. Professional Med J Sept 2005; 12(3): 300-303.

Naeem Rustam, Muhammad Waseem, Irshad Hussain. Cataract surgery; intraocular pressure in non glaucomatous eyes with pseudo exfoliation syndrome. Professional Med J Jun 2006; 13(2): 225-230.

Abdul Hameed Bhatti. Cataract surgery; effects of spontaneous versus controlled ventilation on intraocular pressure during general anaesthesia. Professional Med J Mar 2008; 15(1): 114-119.

Ejaz Ahmad Javed, Muhammad Sultan. Cataract surgery; axial length variation. Professional Med J Sep 2008; 15(3): 387-39.

"Nothing is so strong as gentleness and nothing is so gentle as real strength."

(Ralph W. Sockman)