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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/14788

DOI URL: <http://dx.doi.org/10.21474/IJAR01/14788>



RESEARCH ARTICLE

CLINICAL PROFILE OF PATIENTS OF PANOPHTHALMITIS PRESENTING TO THE TERTIARY HEALTH CARE CENTRE

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Manuscript Info

Manuscript History

Received: 27 March 2022

Final Accepted: 30 April 2022

Published: May 2022

Key words:-

Panophthalmitis, Post Traumatic, Post Operative, Endogenous, Hypopyon

Abstract

Purpose -To study the clinical profile of patients of panophthalmitis presenting to the tertiary health care centre.

Methods-This was a prospective observational study that involved 25 patients with panophthalmitis complaining of blurring of vision, redness, pain, purulent discharge, photophobia and eyelid swelling.

Results-There were 18 males and 7 females and the age group taken was 30 to 75 years. 14 patients belonged to the age group of 30 to 45 years, out of which 10 were males and 4 were females. 7 patients belonged to age group of 46 to 60 years, out of which 5 were males and 2 were females. 4 patients belonged to the age group of 61 to 75 years, out of which 3 were males and 1 was female. Most common presentation in panophthalmitis patients is loss of vision in 88% patients followed by redness in 76% patients, pain in 72% patients, purulent discharge in 68% patients, photophobia in 55% patients and eyelid swelling in 48% patients. Majority of patients belong to low socioeconomic class. The most common cause was post traumatic followed by post operative and some endogenous infections spread through hematogenous route. Of the 25 cases of culture-positive panophthalmitis, 18 cases (75%) had bacterial growth and 7 cases (25%) had fungal growth. In post-traumatic panophthalmitis, Gram-positive bacteria were the predominant species, followed by Gram-negative bacteria and fungi. In endogenous panophthalmitis, Gram-negative bacteria were the predominant species, followed by fungi and Gram-positive bacteria. In postsurgical panophthalmitis, all infections were bacterial.

Conclusion-Panophthalmitis is a dreaded ocular disease and tends to occur more commonly in males of 30 to 45 years age group. Most common presentation of panophthalmitis is loss of vision followed by redness, pain, purulent discharge, photophobia and eyelid swelling and signs include eyelid edema, hypopyon, circumcilliary congestion, corneal haze and ulcer and vitreous haze. Most common cause of panophthalmitis was post traumatic with gram positive bacteria followed by endogenous causes with gram negative bacteria and post operative cases with gram positive bacteria isolated.

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Introduction:-

Panophthalmitis is an intense purulent inflammation of all coats of the eyeball including intraocular structures. Although post-traumatic endophthalmitis is the most common preceding event, the infection can result after postoperative endophthalmitis following cataract surgery, keratoplasty, or rarely after posterior segment procedures. It can also be caused by septicemia or can spread from a pus-producing infection in another part of the body. [Table 1] Organisms implicated include - Bacillus species (most common), **Streptococcus pneumoniae**, **Pseudomonas aeruginosa**, **Staphylococcus epidermidis**, **Clostridium species**, **Salmonella**, **E coli**, Klebsiella, Tuberculous, and also fungi. [1-6]

Although post-traumatic endophthalmitis is the most common preceding event, the infection can result following cataract surgery, keratoplasty, or rarely after posterior segment procedures. It can also be caused by septicemia or can spread from a pus-producing infection in another part of the body. . **Exogenous panophthalmitis is caused by inoculation of the eye by microorganisms from the external environment and most commonly occurs as a complication of ocular surgery or trauma. Occasionally, it results from the contagious spread of infectious microbes from the cornea. Endogenous panophthalmitis is caused by hematogenous spread of infectious organisms from distant sites in the body.**Endotoxins released by gram-positive cocci incite intense cellular and basement membrane inflammation which can cause a diffuse breakdown of various blood ocular barriers. This can lead to exuberant inflammation in cases where the infection does not get timely controlled and plays a significant role in the progression. [4]

Both categories of panophthalmitis lead to subsequent intraocular inflammation and potentially severe visual loss. Posttraumatic panophthalmitis is an important complication of open globe injury. The spectrum of causative organisms varies and depends on the region and environment, the type of injury, the living environment, and the time from injury to wound repair [6]. Bacteria account for approximately 80%–90% of culture positive cases and Gram-positive cocci are the most common isolates among these bacteria, followed by Gram positive bacilli and other Gram-negative organisms. Postoperative panophthalmitis can occur after any intraocular procedure, such as cataract surgeries , pars plana vitrectomy , penetrating keratoplasty [6], scleral buckling with drainage of subretinal fluid , bleb-related infections after trabeculectomy , or implantation of a glaucoma drainage device.

There is no age or sex predilection in the incidence of endogenous panophthalmitis. Although it is caused by hematogenous spread, endogenous panophthalmitis tends to develop unilaterally, with the right eye more commonly affected, possibly due to the more proximal and direct arterial route from the heart to the right carotid artery. Several risk factors for endogenous panophthalmitis have been reported, including chronic metabolic diseases, immunosuppression, malignancy, intravenous drug abuse, longterm presence of an intracorporeal foreign body, and invasive surgery. According to a worldwide systematic survey of endogenous bacterial panophthalmitis, diabetes was the most common predisposing medical condition, and liver abscess was the most common extraocular focus of infection. Ocular symptoms of panophthalmitis, include ocular pain, redness, swelling, and discharge as well as blurred vision and floaters, are non-specific and their occurrence depends on the severity and extent of infection. The presence of bacteremia or fungemia indicates the possibility of other infective loci in the body. In patients with panophthalmitis , systemic symptoms are often non-specific and include malaise, nausea, loss of appetite or weight, abdominal discomfort, fever, chills, and rigor.

The diagnosis of panophthalmitis depends mostly on the clinical findings of ophthalmological examination. In the absence of ocular trauma or surgery, systemic investigations should be performed immediately to look for possible sources of infection or presence of malignancy such as retinoblastoma in children, leukemia, or intraocular lymphoma, which might masquerade as panuveitis.

Panophthalmitis can have potentially serious complications like orbital cellulitis, cavernous sinus thrombosis, meningitis, or encephalitis and can be fatal if left untreated.

The management of patients with intractable panophthalmitis remains controversial. In previous reports, enucleation or evisceration was the only remaining viable treatment option when all options to salvage the eye had been exhausted [1–8]. Because of a relatively high extrusion rate and the potential for sympathetic ophthalmia in the other eye, enucleation had been recommended [2,9,10]. In recent decades, evisceration with either delayed or immediate implant placement has been recommended in patients with panophthalmitis [5–8].

Although delayed primary closure has certain theoretical advantages, primary implantation of orbital implants can prevent prolonged hospitalization and the need for additional surgeries.⁵⁻⁸ However, attempts at implant placement with evisceration are typically abandoned during surgery because the implant is considered unlikely to remain within the necrotic sclera [6]. Melting of the scleral necrotic tissue causes a high extrusion rate of the orbital implant.

Method And Material:-

This was a prospective observational study that involve 25 patients with panophthalmitis complaining of loss of vision, redness, pain, purulent discharge, photophobia and eyelid swelling. Patients were recruited from the OPD of MLB MEDICAL college, Jhansi, Uttar Pradesh and were followed from 10th December 2021- 10th May 2022. It was performed under the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study.



Eyelid Swelling With Purulent Discharge



Eyelid Swelling With Chemosis And Congestion



Severe Hyperemia With Sloughing Cornea.

Inclusion criteria:-

All patients between the age group 30 to 75 years who presented to the OPD of MLB medical College Jhansi with the complaint blurring of vision, redness, pain, purulent discharge, photophobia and eyelid swelling and who were found to have history of trauma , surgery or systemic features like fever, chills, rigors, malaise, nausea, loss of appetite and abdominal discomfort. Diagnostic tests like slit lamp examination, gram staining, culture on blood agar, KOH smear, Sabouraud dextrose agar culture were done.

Exclusion criteria:-

1. Patients outside the age group of 30 to 75 years
2. Patients with any other corneal pathology.
3. Patients with other conjunctival diseases.
4. Patients with any other ocular pathology.
5. Mentally or physically unfit patients.

All patients were subjected to a detailed history taking, complete ophthalmic examination in diffuse and focal light, slit lamp examination and numerous diagnostic tests to identify microorganisms.

Results:-

A total of 25 patients were studied. We included only eyes with a recent complaint of blurring of vision, redness, pain, purulent discharge, photophobia and eyelid swelling. There were 18 males and 7 females and 60% of the studied eyes were right eyes.

Table1:- Age distribution in panophthalmitis population.

Age group (in years)	Number of patients
30-45 years	14
46-60 years	07
61-75 years	04
Total	25

Table2:- Gender distribution in panophthalmitis patients.

Gender	Number of patients
Male	18
Female	07
Total	25

Table3:- Causes of panophthalmitis.

Causes	Number of patients
Post traumatic	13
Endogenous infection	08
Post operative	04
Total	25

Table 4:-Ocular symptoms in patients of panophthalmitis.

Causes	Number of patients
Loss of vision	88%
Redness	76%
Pain	72%
Purulent discharge	68%
Photophobia	55%
Eyelid swelling	48%

Table 5:- Micro organisms isolated in patients of panophthalmitis.

Micro organism		Post traumatic	Post operative	Endogenous
Gram positive bacteria	Staphylococcus	5	2	1
	Streptococcus	2	0	0
	Micrococcus	1	0	0
	Enterococcus	0	1	0
Gram negative bacteria	Pseudomonas	1	01	00
	Enterobacter	3	03	01
	Xanthomonas	0	00	02
	Klebsiella	0	00	00
Fungi	Aspergillus	1	0	0
	Fusarium	0	0	2
	Candida	0	0	1

Discussion:-

In a study describing clinical features, demographic profile and factors predicting outcome of endophthalmitis under care progressing to panophthalmitis at a tertiary eye institute , Rajeev R Pappuru reported that the commonest etiology of endophthalmitis progressing to panophthalmitis was noted following open globe injury endophthalmitis, seen in 13/33 (39.4%) of eyes followed by endophthalmitis associated with microbial keratitis seen in 8/33 (27.3%) eyes. The time interval in days between the diagnosis of endophthalmitis and progression to panophthalmitis was 4.5 ± 3.88 days (median 3 days, range 1-14 days). Fifteen eyes denied perception of light (PL) at the time of diagnosing panophthalmitis. Culture was positive in 16 cases (48.4%), Streptococcus pneumoniae was the commonest species (4 cases) followed by Pseudomonas aeruginosa (3 cases) and Staphylococcus epidermidis (2 cases).

In a study of panophthalmitis and Orbital Inflammation with Cavernous Sinus Thrombosis Following Cataract Surgery by Emmanuel Marinos, Dominic McCall showed **Klebsiella pneumoniae**, **Streptococcus spp.**, and **Bacillus cereus** accounting for the majority of cases.^{11,12} Most cases of exogenous panophthalmitis occur after a penetrating eye injury, with **Clostridium perfringens** being a common causative organism.¹³ The incidence of post-surgical panophthalmitis is limited to case reports. These include 3 cases of panophthalmitis post cataract surgery in India,^[14,15] a case of panophthalmitis following trabeculectomy surgery in a child,¹⁶ a case of panophthalmitis and orbital cellulitis following penetrating keratoplasty,¹⁷ and a case of panophthalmitis post vitrectomy.¹⁸

In a study carried out by Mark P Breazzano, Andrea A Tooley a high suspicion of contribution of Candida auris to panophthalmitis could be warranted early in the evaluation and management of profoundly immunocompromised patients, particularly those who have had sequential care at multiple neighboring metropolitan hospitals.

Conclusion:-

Panophthalmitis is a significant eye disease that can cause devastating consequences. The prognosis is usually extremely poor, even with prompt diagnosis and treatment. Thorough evaluation of clinical presentation, systemic symptoms, and history is essential to the diagnosis of panophthalmitis. It tends to occur more in males of 30 to 45 years age group of low socio economic status. Most of cases showed history of ocular trauma or some recent ocular surgery. Our study spans over a period of 6 months and is prospective in nature focusing on age and gender distribution and clinical profile and micro organism isolated from patients of panophthalmitis. Most predominant symptom of panophthalmitis is loss of vision followed by redness, pain, purulent discharge, photophobia and eyelid swelling. Most common microbial species isolated in post traumatic panophthalmitis were Gram-positive bacteria followed by Gram-negative bacteria and fungi. In endogenous endophthalmitis, Gram-negative bacteria were the predominant species, followed by fungi and Gram-positive bacteria. In postsurgical panophthalmitis, gram positive bacteria was predominant.

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