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ORIGINAL ARTICLE

Association of Conjunctivitis through Microflora in Optical Lenses Users

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ABSTRACT

Aim: To find the association of conjunctivitis through microflora in optical lenses users.
Study design: Cross sectional study
Place and duration of study: Department of Ophthalmology, Pakistan Railways Hospital, Islamic International Medical College, Rawalpindi from 1st January 2021 to 30th June 2021.
Methodology: Forty patients were enrolled. Patient's clinical symptoms, features were examined for conjunctivitis and slit lamp examination was also followed. Swab cultures from optical lenses were taken for conducting various agar v=based cultures for identifying microorganisms presence.
Results: There were more males than females with mean age were 25±4.5 years. Clinical examination presented dryness in eyes as highest percentage. The anti-microbial sensitivity showed highest susceptibility pattern for resistance of ampicillin. Various bacterial types showed that highest frequency of Micrococci as 47.5%.
Conclusion: A Robust association of conjunctivitis through microflora was found optical lenses users.
Key words: Hygiene practices; Microflora; Optical lens users; Conjunctivitis

INTRODUCTION

Environmental factors have a great influence on causing disturbances in the conjunctival flora. These factors can either be physical or polluted environment and unhygienic habits leading to dust particles and microorganisms invade the conjunctiva. Optical lenses user are highly prone for causing conjunctivitis due to their repeated use of lenses for long times which can easily cause attack of microorganism in condition where proper hygienic maintenance of lenses is avoided[1,2].

Lenses are either permanent fit or used as temporary. Some lenses are also required discarding after a specified time. Cases where the lenses water is not kept changed and left for weeks becomes highly efficient towards carrying microorganisms which then with the use of lenses causes microorganism invasion in the corneal epithelium resulting into conjunctivitis[3,4]. All eye conditions related with optical lenses mishandling may not result into serious eye ailments however there are still reported cases where this mishandling and improper hygienic practices has resulted into severe keratitis, eye inflammation or even blindness, therefore requiring extra vigilance in its treatment[5-10].

The present study was hence designed to address this issue and assess the association between conjunctivitis through microorganism invasion in people using optical lenses. The results of the present study will assist in between health related outcomes and knowledge about relation between these important factors.

MATERIALS AND METHODS

This study conducted after IRB permission in the Department of Ophthalmology, Pakistan Railways Hospital, Islamic International Medical College, Rawalpindi from 1st January to 30th June 2021. Each patient signed a written informed approval/consent of participation. It was a cross sectional study which included 40 cases age between 20-35 were coming to eye OPD for eye examination and were those who were using optical lenses for their eye sight condition. Slit lamp was sued for their eye examination in addition to clinical complete assessment. Conjunctivitis was confirmed through clinical symptoms as itching, pink eye, swelling, watery eye or light sensitivity. Chronic conjunctivitis was excluded from the study. Patients within young adult age group were selected. Their complete clinical history as well as other demographic and lab data was recorded through questionnaire. The lenses in use were requested from each patient and swab-based samples were taken from it. Post completion of 24 hours in 37°C of BHI broth each sample was sub cultured in the blood agar as well as Mac-Conkey agar in addition to Sabouraud's dextrose agar. The former two agars were then incubated again at 37°C for 1-2 days while the later agar was incubating at 25°C. Susceptibility of antimicrobe for bacteria was conducted through Kirby-Bauer disc-diffusion method. Data was entered and analyzed through SPSS-25, where Chi square test was applied with a p value less than of 0.05 as significant.

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RESULTS

The mean age of patients was 25±4.5 years. There was a major variance of gender with higher number of males than females. Majority of the males were within age group of 20-25 years. The age of the patients was between 20-35 years (Table 1).

Clinical examination presented dryness in eyes as highest percentage while it was followed by redness of the eyes. Photophobia was only seen in 6.1% of the cases while almost half of the patients were having the complaint of ocular pain (Fig. 1).

The anti-microbial sensitivity showed highest susceptibility pattern for resistance of ampicillin while highest susceptibility pattern for sensitivity of cefotaxime followed by amoxicillin clavulanate in both resistance and sensitivity cases (P<0.05) [Fig. 2].

Various bacterial types showed that highest frequency of micrococci as 47.5% and diphtheroid as 25% was noticed in the cases with least cases reporting E. coli or pseudomonas with only 2.5% in each case (Table 2).

Table 1: Distribution of age according to gender

Age (years)	Males		Females	
	No.	%	No.	%
20-25	19	63.3	4	40
26-30	6	20	4	40
31-35	5	16.6	2	20

Table 2: Bacteria types through culturing (n=40)

Bacterial Types	No.	%age
Enterobacter Cloacae	3	7.5
Enterococcus	3	7.5
E. coli	1	2.5
Micrococci	19	47.5
Klebsiella pneumoniae	2	5
Pseudomonas	1	2.5
Diphtheroid	10	25

Fig. 1: Clinical features of cases

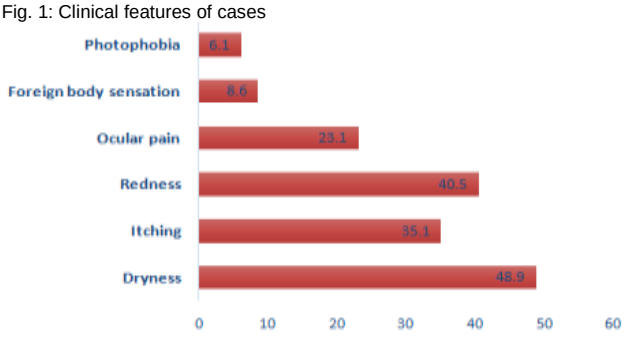
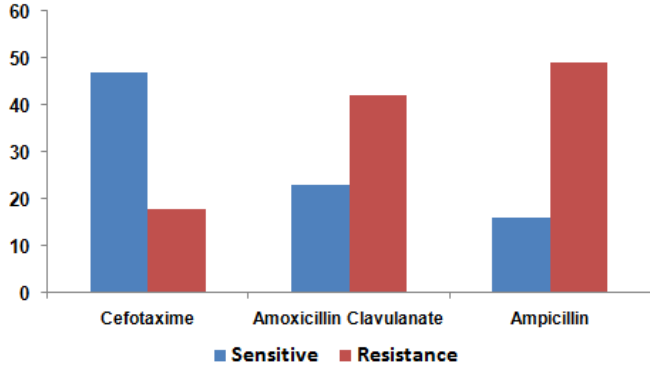


Fig. 2: Anti-microbial sensitivity



DISCUSSION

Contact lenses are widely being used in modern era both for therapeutic and cosmetic purposes. Poor hygienic practices and lack of compliance in lens care often leads to microbial contamination and caused eye infection and conjunctivitis as a result.[7,11] This could be possible due to many underlying reasons such as corneal hypoxia which interrupts he epithelium and serve as a point for microbial contamination and entrance.[8] Conjunctivitis is considered as a major eye infection in contact lens users. Storage case contamination is most common that can be occurred both in asymptomatic and symptomatic optical lens wearers even after good care practices[11].

Microbial isolation from conjunctivitis was quite high in present study that was extracted from eyes, contact lens and its accessories. Whole contact lens was used for sampling technique and was transferred into the broth. This was different from other studies in which swabbing of only lens was done[12-14]. This type of sampling techniques helped us in getting higher and exact frequency and type of microorganism. Microflora of conjunctiva was similar to either the storage case or the lens which proved that microorganism was acquired from optical lens and from its storage case/accessories. Antiseptic solution for lens care could prove a better and effective option for good hygiene practicing.[15-17]

Further studies and larger number of participants are required to exactly find the association and to determine the type of microorganism. Sign and symptoms sometimes also vary in compliance with different microflora. High number of resistant strains was also found. Good hygiene practices are the only possible solution to combat this problem.

CONCLUSION

A robust association of conjunctivitis through microflora was found optical lenses users which emphasizes the fact that good hygienic practices must be followed for avoiding critical high conditions as conjunctivitis.

Conflict of interest: Nil

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