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Research Article

PREVALENCE OF MYCOFLORA OF CONJUNCTIVAL AMONG PATIENTS APPEARING IN EYE WARD OF POLYCLINIC HOSPITAL ISLAMABAD

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Abstract:

Objectives: The aim of this research work was to examine the prevalence of conjunctival mycoflora among patients appearing in Polyclinic hospital Islamabad.

Methodology: We collected total 172 swabs from the conjunctival of the patients who were attending the eye ward of Polyclinic hospital Islamabad from December 2019 to June 2020. The culturing of the swabs was carried out on the Sabouraud's Dextrose Agar and then incubation was carried out at an ambient temperature for 7 days.

Results: We found 11 patients positive for the saprophytic fungi. Most frequent saprophytic fungus was the *Cladosporium* present in 4 patients. Some other types of filamentous fungi were *Drechslera* in one patient, *Alternaria* in one patient, *Fusarium* in single patient and *Andepicocum* was also present in one patient. Additionally, 03 yeasts isolate include *Candida albicans*, *Cryptococcus*, and *Rhodotorularubra* were also separated from different patients.

Conclusion: We found a presence of the fungi in patient's conjunctiva. Conditions of the environment, social and economic condition and adverse hygienic conditions, resulted in the high prevalence of the isolation of conjunctival fungus (6.40%). The rate of prevalence was very high in the males (72.70%) as compared to females (27.30%).

KEYWORDS: Conjunctiva, Fungus, Frequent, Mycoflora, Prevalence, Filamentous.

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INTRODUCTION:

Conjunctiva is known as the lining of the mucous membrane on the eyelid's posterior surface and anterior surface of the globe as far as limbus. Conjunctiva comprises of the stratified non-keratinizing squamous epithelium that is intercepted with the mucous-comprising gobletcells, which are very common in the plica semilunaris and fornices. The layer of the epithelium covers the substantiapropria that is much thick in the fornices and it is very thin at the site of the covering of the tarsus. Because of the direct contact with the surrounding of environment, the sac of conjunctiva is expected to harbour the many micro-organisms like the saprophytic fungi [1,2]. There is variation in the spectrum of the normal ocular mycoflora with the occupation, age, predisposing factors of the diseases and even the host's geographic location [3-7]. Under the suitable culture condition, some species of the fungi (as Candida) may be cultured from the upper surface of eye. Different species of fungi, which include both the molds and yeasts are the main part of the flora of normal eyelid in up to 17.0% of the normal general population, but both of these are not the normal colonizer of conjunctiva of the human eye.

There are many reports which stated a variation in the prevalence of the isolations of fungi from the sacs of conjunctiva [2]. Many researches work state that the rate of prevalence of the eye's mycotic infection has increased in last ten years [1]. However, there is presence of the fungal infection in the conjunctiva of some patients in this particular literature. It appears that many mechanisms in the eye conjunctiva prevent the over development of different micro-organisms. The cooperated eye may harbor the number of fungi in the conjunctiva as compared to the normal conjunctiva. In the clinical field, the utilization of the antibiotics or the topical corticosteroids, or a state like the dry eye, may change the spectrum of the conjunctiva flora and eyelid and they are very common predisposing features of the infection [1,6, and 7]. Fungal infections of the fungi are normally caused by the endogenous fungi of the environment that have been associated to the outdoor/indoor air pollution full of microbes [8]. Fungi has the ability to infect the structure of eye like orbit, cornea, and conjunctiva etc. the acknowledged causative micro-organisms include the fusarium, candida albicans, spergillus, dematiaceous and nocardia [8-11].

The survival of the fungi candida is for many years on the soil and air and it may be transferred to the eyes via the dust and/or touch of the hand. The purpose of this research work was to examine the rate of prevalence of the conjunctival mycoflorain the patients attending the Department of Ophthalmology in Polyclinic hospital Islamabad.

METHODOLOGY:

In this study, we collected total 172 swabs from the conjunctival mycoflora of the patients present without any history of the ocular infections in both genders visiting the eye ward of our institute from December 2019 to June 2020. The inoculation of the swabs was carried out on the slants of the Sabouraud's dextrose agar, SDA made of Germany and then we incubated the swabs at the ambient temperature for complete seven days. We performed the examination of the cultures for the growth and development of the fungi. Then we isolated the grown filamentousfungi and sub-cultured the isolation on the new fresh SDA and performed the incubation at the normal room temperature. Additionally, we also cultured the suspected colonies to the yeasts on the CHRO-Magar Candida (CHRO-Magar Candida Company of Paris) and then we incubated it at the temperature of 37°C.

We identified the yeasts on the basis of the morphology of the colony on the SDA and CHRO-Magar Candida, slide culture's morphology with help of microscope and differential tests procedures [12,13]. We also detected the saprophytic fungi on the base of the morphology of colony on the SDA and morphology identification with the help of microscope of the cultures present on slide.

RESULTS:

In this current research work, we sampled total one hundred and seventy-two patients. Among them, 63.40% (n: 109) patients were males and 36.60% (n: 63) patients were females. The range of the age of the patients were from 3 to 82 years with an average age of 42.50 years. The patient's distribution was in spring 19.20%, summer 32.60%, autumn 23.80% and winter 24.40% (Table-I). Total 6.40% (n: 11) patients (eight males and three females) were present as positive for the saprophytic fungi. Cladosporium was the most frequent type of saprophytic fungus (4 patients). Some other filamentous fungi were the drechslera (01 patient), alternaria (01 patient), fusarium (01 patient) & epicoccum (01 patient).

Table I: Patients Characteristics (n=172)

Characteristics		No	Percent
Gender	Male	109	63.4
	Female	63	36.6
Age (3 - 80 years)			42.5
Seasonal Distribution	Spring	33	19.2
	Summer	56	32.6
	Autumn	41	23.8
	Winter	42	24.4

DISCUSSION:

In nature, majority of the infections of eyes are endogenous and all these infections have been associated with the air pollution because of microbes [14]. All such infections are attributed to different contaminants, which are much widespread in the surroundings [15]. There is a strong association between the rates of microbial contaminations and seasonality [16]. In this current research work, total 72.70% isolates of swabs were the filamentous fungi that appeared largely because of the contamination of air in surroundings of environment as well as spoiled plant. The rate of prevalence of the airborne fungi is totally dependent on the temperature, season and relative humidity in the airborne atmosphere. In this current research work, 08 & 03 isolations of the saprophytic fungi were correspondingly isolated in the duration of the seasons of spring-summer & autumn-winter. On one other research work conducted by Dalfré, sixty four percent of the investigated samples had one or greater than one genera of fungi present in their conjunctiva [7]. He isolated the fusarium spp., geotrichum spp., cladosporium spp., penicillium spp. mucor spp. & oidium spp. in his research work. However, in his research study, Sehgal stated that only sixteen percent of the total samples collected from conjunctiva were yielded positive isolations of fungi [1].

In one other study, 6.60% samples from the healthy conjunctivas were present as positive for different types of fungi as cladosporium, fusarium, aspergillus and rhizoctonia species (ando & takatori). In this current research work, we observed the 72.70% positive cultures in the male patients and this finding is consistent with the results of many other research works conducted in past [1]. Fleiszig in his research work isolated the *C. albicans* from the conjunctiva of the contact lens wearer [17]. Conjunctiva flora may change in various professions/ occupation [1], behcet patients [18], Hansen's disease [3] and patients of

HIV infection [19]. Additionally, there different isolations of the yeasts comprise the candida albicans; Cryptococcus and rhodotorularubra were also separated from the studied patients. Human normal flora is both *C. albicans* & *R. rubra* and both of these are the cause of infections in the compromised patients. Gunduzin his research work compared the conjunctiva's fungal flora in the patients of behcet disease with the normal healthy population. He discovered that species of candida 6.0% of the patients as compared to the only two percent in the healthy controls [18].

In the current region of the country of this research work, ambient temperatures touch peak during the months from March to September. This weather can offer the ideal temperature, weather and environment for the development and growth of the different species of fungi.

CONCLUSION:

We found a remarkable availability of fungi in the conjunctiva of the studied subjects. Various conditions of the environment, social & economic conditions and adverse hygienic conditions, resulted to the high rate of prevalence of isolation of the conjunctival fungus (6.40%). The rate of prevalence was very high among males (72.70%) as compared to females (27.30%).

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