Original Article

Normal Conjunctival Flora

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ABSTRACT

Objective: To determine the prevalence of normal conjunctival flora and its types.

Study design: An observational study.

Place And Duration of Study: At Ophtha-lmological Department, DHQ/Allied Hospital, PMC, Faisalabad, from November 2006 to February 2007.

Patients And Methods: This study was performed o 500 patients, aged form 20 years to 70 years wit normal looking eyes. The samples of sterile stuart' swab were made on conjunctiva of patients, withou touching eyelashes or lid margins. The swabs wer touched with conjunctiva of both eyes and placed in stuart's transparent media to shift to microbiological laboratory.

Results: Out of 500 swabs 412 (82.4%) showed no growth while 78 (15.6%) showed microbial growth. Out of these 78 swabs, there were 44 (56.41%) having normal flora, while 34 (43.59%) had other pathogens.

Conclusion: The normal looking eyes harbour different types of the organisms. Any trauma, accidental hurt or elective surgical procedure is not free from risk of conjunctival infection, keratits or endophthalmitis etc.

Keywords: Conjunctival flora, culture media, growth, no growth

INTRODUCTION

The body surfaces support the growth of a variety of bacteria and fungi which collectively are called the normal flora. The viruses and parasites are not considered the members of the normal flora, although they are present in asymptomatic individuals [1].

These bacteria may be resident playing an important role in normal body functions and health. The transient bacteria comprise of non-pathogenic that inhabitate the conjunctiva for days or weeks. These do not produce infections and play no significant role till the epithelial surfaces are pealed or injured [2].

The normal flora of conjunctiva was established in 19th century [3].

The gram positive organisms; particularly coagulase-negative staphylococci are the main residents of normal eye. So these cause post-operative infections [4].

The corynebacteria usually predominate amongst the conjunctiva where as streptococcal species and gram negative bacilli are less frequent.[5]
The normal conjunctiva showed Staphylococcus epidermidis, Staphylococcus aureus species and anaerobic propioni bacterium acnes, streptococcus non-hemolytic, while Haemophilus Influenza was common in children [6].

MATERIALS AND METHODS

The study was done in Ophthalmological unit at DHQ/Allied Hospital, PMC, Faisalabad with co-operation of microbiology department of DHQ /Allied Hospital, PMC, Faisalabad, from Nov-2006 to Feb-2007. The aim was to discover the normal flora and distinguish bacterial types in 500 patients, aged from 20 years to 70 years visiting the eye OPD. There were 325 males (65%), while 175 females (35%) out of 500 patients. The samples of sterile Stuart's swab were made on conjunctiva of patients with apparently no infection or redness and after taking proper consent. The slit lamp examination of all eyes was done to exclude any apparent lid, conjunctiva, or Corneal Pathology. Also patient on any oral or topical medication with in last one week were excluded. The swabs were not touched with eyelashes or lid margins. The samples were placed in Stuart's transparent medium for onward shift to microbiology laboratory. The swabs were streaked on entire media. The culture medias used were sheep blood agar, chocolate agar, Mac conveys agar, fungal media, macrobiotic agar and sabourad 4% dextrose agar. Gram staining was done for each case.

The culture media were incubated at 37°C to allow bacterial growth and held for 3 days to ascertain either "growth" or "No growth". While sabourad 4%

dextrose agar and mycobiotic agar were incubated at 25°C for 2 weeks to show "growth" or "No growth" pattern.

RESULTS

Out of the 500 swabs; 412 (82.4%) showed "No growth", while growth was observed in 78 (17.60%). The presence of the normal bacterial flora was 44 (8.8%) while 34 (6.8%) had mixed flora. It is significant that 34 swabs showed pathogenic organisms in normal looking eyes.

In normal flora, Staphylococcus epidermidis were predominant (53.85%) and corynebacterium species were 28.21%.

The other isolated species were quite less in number, e.g. streptococcus non-hemolytic (6.41%), morexella (3.85%), staphylococcus coagulase negative (2.56%) and Neisseria species 2.56%. There were 51 male (65.39%) and 27 female (34.62%) patients.

Out of these 78 patients, 51 (65.39%) were male and 27 (34.62%) were female.

In normal flora group there were 30 (68.15%) male and 14 (31.91%) female and in other pathogen group there were 21 (61.76%) male and 13 (38.23%) female patients.

Table # 1:
Occurrence of Bacteria in samples (78)

Sr. No	Bacteria	No of swabs	%age
1.	Staph. Epidermidis	42	53.85
2.	Diphtheriads	22	28.21
3.	Sterptococci Non-hemolytic	5	6.41
4.	Moraxella	3	3.85
5.	Staph. (Coagulase –ve)	2	2.56
6.	Neisseria Species	2	2.56
7.	Staph. aureus	1	1.28
8.	Others	1	1.28
	Total	78	100

Table # 2:
Swab Test Evaluation (500)

Sr. No	Observation	No of swabs test	%age
1	No growth	412	82.4
2	Growth	78	15.6
3	Other Pathogens	10	2
	Total	500	100

Table # 3:
Swab test Growth Evaluation (78)

Sr. No	Observation	No of swabs test	%age
1	Normal flora	44	56.41
2	Other Pathogens	34	43.59
	Total	78	100

Table # 4:
Sex Distribution of Study Cases (500)

Sr. No	Sex	No	%age
1	Male	325	65
2	Female	175	35
	Total	500	100

Table # 5:
Sex Distribution of Normal Flora (44)

Sr. No	Sex	No	%age
1	Male	30	68.1
2	Female	14	31.9
	Total	44	100

Table # 6:
Sex Distribution of Other Pathogens (34)

Sr. No	Sex	No	%age
1	Male	21	61.75
2	Female	13	38.23
	Total	34	100

Table # 7:
Sex Distribution of Normal Flora and other Pathogens (44+34)

Sr. No	Sex	Normal Flora	Other Pathogens	Total %age
1	Male	30 (68.1%)	21 (61.76%)	51 (65.39%)
2	Female	14 (31.9%)	13 (38.23%)	27 (34.62%)
	Total	44 ((100%)	34 (100%)	78 (100%)

DISCUSSION

The Faisalabad is an industrial city with a lot of population, dust and polluted environment. The males are more exposed to the dusty environment and unhygienic water and soil. A randomized sample of 500 normal looking eyes was subject to bacterial study.

The bacteria of flora may be found in eyes from environment, physical contact, or unhygienic habits of the people. The dirty people serve to invite micro-organism through vectors and allow them to flourish on the skin, eye lids and mucous membrane etc. The staphylococcus epidermidis and Diphtheroids were the most common organisms.

Cason and Winkler cultured streptococcus species from less than 1% of their patients in Birmingham and Alabama [7].

Locatcher Khoraza and Seegal reported 42% staphylococcus aureus in 10271 individuals [8].

Soudakoff in 1954 cultured Diphtheroids from only 2.8% of eyes in his Los Angels based series [9].

Starr and Lally observed "No growth" in 24% subjects with staphylococcus epidermidis was found in 58% subjects. Other species were Diphtheroids 2% and Hemophilus

Influenza 2% in cultures from pre-operative conjunctival swabs [10].

In the study of seal et al at Southampton Eye Hospital, it was found that 30 patients of normal conjunctiva, had 30% "No growth" while 57% staphylococcus epidermidis [11]. This study is close to our observation.But "No growth" ratio is near to study of Khan J. A. at Akhter Eye Hospital Karachi [12]. They showed 89.1% swabs with no growth which is closer to our study i.e. 82.4%.Perkin et al found staphylococcus epidecmidis as 70 % of normal conjunctival swabs as control subjects [13].

Speaker et al found 69.2% staphylococcus epidermidis at the New York Eye and Ear Infimary in postoperative external bacterial flora [14].

Table ft 4:
Percentage of staphylococcus Epidermidis in various regions of the world

COUNTRY	PLACE	%AGE OF STAPH. EPIDERMIDIS
United Kingdom	Southampton Eye Hospital	57.0%
Pakistan	DHQ/Allied Hospital Faisalabad	53.85%
Pakistan	Akhter Eye Hospital Karachi	51.6%
USA	South Carolina Hospital	48.0%
Japan		24.1%
Thailand	Ramathibodi Eye Hospital	21.2%
Israel	Ram Bam Medical Center	9.1%

Simaroj et al studied 80 cases at Rama Thibati Hospital and found Staphlococcus epidermidis 21.2% as predominant organism.[15]

CONCLUSION

In our study on the normal conjunctival flora the male patients had higher percentage (65%) than the female, (35%). The staphylococcus epidermidis was higher in number (53.85%) while Diphtheroids species were (28.21%) So the staphylococcus Epidermidis was commonest normal conjunctival flora. So it is the commonest endophthelmitis causing organism.

The mixed flora was found in (6.8%) of the cases and this combination can lead to post-operative endophthalmitis.

So the normal looking eyes showed normal flora in 8.8%. Hence prior elimination of pathogens is necessary to prevent post-operative endophthalmitis. Bacterial culture test must be the routine practice to prevent post-operative infections.

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