Normal Conjunctival Flora

Ejaz Ahmad Javed* Muhammad Sultan* Rana Qaisar Mehmood

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 inhabit 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 cooperation 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, without touching eyelashes or lid margins. The swabs were 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, keratitis or endophthalmitis etc.

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

ABSTRACT
Objective: To determine the prevalence of normal conjunctival flora and its types.
Study design: An observational study.
Place And Duration of Study: At Ophthalmological Department, DHQ/Allied Hospital, PMC, Faisalabad, from November 2006 to February 2007.
Patients And Methods: This study was performed on 500 patients, aged from 20 years to 70 years with normal looking eyes. The samples of sterile stuart’s swab were made on conjunctiva of patients, without touching eyelashes or lid margins. The swabs were 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, keratitis or endophthalmitis etc.

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Original Article
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)

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

Table # 2:
Swab Test Evaluation (500)

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Observation</th>
<th>No of swabs test</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No growth</td>
<td>412</td>
<td>82.4</td>
</tr>
<tr>
<td>2</td>
<td>Growth</td>
<td>78</td>
<td>15.6</td>
</tr>
<tr>
<td>3</td>
<td>Other Pathogens</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>500</td>
<td>100</td>
</tr>
</tbody>
</table>

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 epidermidis 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 Infirmary in postoperative external bacterial flora [14].

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

Simaroj et al studied 80 cases at Rama Thibati Hospital and found Staphloccocus 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 endophthalmitis 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.

REFERENCES


AUTHORS

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