Extended wear contact lens related bacterial keratitis

Khalid F Tabbara, Hisham F El-Sheikh, Bassam Aabed

Abstract

Aims—To report the clinical findings and visual outcome of patients with extended wear contact lens (EWCL) related bacterial keratitis.

Methods—11 cases with EWCL related bacterial keratitis were included. Corneal scrapings were obtained for cytology and cultures.

Results—Nine patients had unilateral bacterial keratitis and two patients showed bilateral involvement. Corneal scrapings revealed Pseudomonas aeruginosa in seven patients, Staphylococcus aureus coagulase positive in one patient, and Staphylococcus epidermidis in three patients.

Conclusion—EWCLs may be associated with bacterial keratitis and may result in visual loss. Dispensing contact lenses by optometrists should be performed in consultation with ophthalmologists.

Several factors may compromise the defence mechanisms of the ocular surface leading to corneal infection. Deficiency in tears, local corneal trauma, obstruction of the nasolacrimal duct, the use of contact lenses, and immunodeficiency may lead to bacterial keratitis.1

The number of patients wearing contact lenses has increased over the past few decades and contact lenses became a major predisposing factor for microbial keratitis, contributing to more than 30% in some published studies.2 Microtrauma of the cornea may occur with the use of contact lenses allowing bacteria to adhere to the surface of the cornea. Bacteria may also adhere to the debris and to the soft contact lens. In addition, the prolonged use of extended wear contact lenses can lead to localised hypoxia of the cornea resulting in epithelial oedema and punctate keratitis. Patients using soft contact lenses are at greater risk than with other types of lenses.3

We report 11 cases of bacterial keratitis that were seen at the eye centre in Riyadh, Saudi Arabia. The main purpose of this paper is to report the clinical findings and visual outcome in patients with extended wear contact lens (EWCL) related bacterial keratitis.

Discussion

The use of EWCLs, the harshness of the climate in Saudi Arabia, and improper care in the handling of contact lenses may have contributed to the occurrence of bacterial keratitis among our patients. Sleeping with the contact lenses may cause hypoxia, epithelial oedema, and superficial punctate keratitis which may predispose to corneal infection.4 Contact lenses may compromise the ocular surface by depriving the corneal epithelium of...
normal tear flushing and from the non-specific humoral immune mechanisms. Microtrauma to the cornea may lead to superficial punctate keratitis. Minute epithelial defects may allow adhesions of the bacterial surface to the cornea establishing the infection. All our patients used EWCLs and were instructed to sleep with their contact lenses and to exchange them once a week for new ones. Despite extensive and aggressive use of topical and subconjunctival antibiotics, five (38.5%) eyes out of 13 treated eye.

**Table 1 Clinical findings and visual outcome among 13 eyes of 11 patients with bacterial keratitis**

<table>
<thead>
<tr>
<th>No</th>
<th>Age/sex</th>
<th>Laterality</th>
<th>Causative organism</th>
<th>Pre</th>
<th>Post</th>
<th>Final clinical outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22/M</td>
<td>L</td>
<td>Staphylococcus epidermidis</td>
<td>CF 6'</td>
<td>20/60</td>
<td>Central corneal scar with thinning</td>
</tr>
<tr>
<td>2</td>
<td>17/F</td>
<td>R</td>
<td>Pseudomonas aeruginosa</td>
<td>20/400</td>
<td>20/30</td>
<td>Central scar decemetocle</td>
</tr>
<tr>
<td>3</td>
<td>20/F</td>
<td>R</td>
<td>Pseudomonas aeruginosa</td>
<td>CF 5'</td>
<td>20/20</td>
<td>Central corneal scar</td>
</tr>
<tr>
<td>4</td>
<td>38/F</td>
<td>L</td>
<td>Staphylococcus epidermidis</td>
<td>20/20</td>
<td>20/20</td>
<td>Peripheral corneal scar</td>
</tr>
<tr>
<td>5</td>
<td>54/M</td>
<td>L</td>
<td>Staphylococcus aureus</td>
<td>20/30</td>
<td>20/20</td>
<td>Clear cornea</td>
</tr>
<tr>
<td>6</td>
<td>22/F</td>
<td>L</td>
<td>Pseudomonas aeruginosa</td>
<td>20/100</td>
<td>20/30</td>
<td>Central and peripheral corneal scar</td>
</tr>
<tr>
<td>7</td>
<td>43/M</td>
<td>R</td>
<td>Pseudomonas aeruginosa</td>
<td>CF 6'</td>
<td>20/20</td>
<td>Central corneal scar</td>
</tr>
<tr>
<td>8</td>
<td>42/M</td>
<td>R</td>
<td>Pseudomonas aeruginosa</td>
<td>CF 6'</td>
<td>20/20</td>
<td>Peripheral corneal scars</td>
</tr>
<tr>
<td>9</td>
<td>22/M</td>
<td>R</td>
<td>Pseudomonas aeruginosa</td>
<td>20/100</td>
<td>20/20</td>
<td>Peripheral corneal scars</td>
</tr>
<tr>
<td>10</td>
<td>27/M</td>
<td>R</td>
<td>Staphylococcus epidermidis</td>
<td>20/100</td>
<td>20/20</td>
<td>Corneal scar</td>
</tr>
<tr>
<td>11</td>
<td>17/F</td>
<td>L</td>
<td>Pseudomonas aeruginosa</td>
<td>HM 20/20</td>
<td>20/30</td>
<td>Paracentral corneal scar</td>
</tr>
</tbody>
</table>

BCVA = best corrected visual acuity; CF = counting fingers; HM = hand movement.

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