Multi-Resistant Enterococci and Morganella Morganii: A Rare Cause of Complicated Keratitis

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An eighty-five-year-old female presented with preexisting conditions of benign essential hypertension, dyslipidemia, chronic renal failure and diabetes mellitus type 2. She had gastroenteritis, pain and redness in right (blind) eye with corneal decompensation, scarring and right-eye corneal ulcer with hypopyon. Corneal scrapings sent for culture report revealed growth of Morganella Morganii and Enterococci. Corneal ulcer was successfully treated with topical and oral antibiotics.


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She was diagnosed as right eye keratitis (corneal ulcer). No hypopyon was noted. Eye swab and corneal scrapping was sent for culture and sensitivity. An empirical treatment including topical Gatifloxacin eye drops every hour with erythromycin ointment every six hours was initiated. The following day, hypopyon of 1 mm was noted. Vancomycin 25 mg/ml eye drops and fortified Ceftazidime 50 mg/ml eye drops were added every hour as progressive central corneal ulcer was seen. Oral Moxifloxacin 400 mg once a day was started as prophylaxis. Initially, Gram stain was negative, and PAS stain showed fungal filaments. Voriconazole, 1% eye drops every six hours was started. The culture revealed moderate growth of Morganella morganii and Enterococci, see tables 1 and 2. Eleven days following treatment, the corneal epithelial defect was reduced to 1 mm and hypopyon disappeared, see figure 2.
**DISCUSSION**

Enterococci are Gram-positive facultative anaerobes. There are 12 different genera of Enterococci. The pathogenic mechanisms of Enterococcus infectivity are not well-understood. Almost certainly, the pathogenicity of Enterococci lies in their capability to build up antibiotic resistance; multidrug resistance has made treatment of some Enterococcus infections a clinical challenge.

To the best of our knowledge, two cases of enterococcal keratitis were reported in the literature: Polymicrobial keratitis developed in a corneal graft and Vancomycin Resistant Enterococcus crystalline keratopathy in a corneal graft. Enterococcus faecalis is generally sensitive to vancomycin, whereas Enterococcus Faecium is associated with increasing vancomycin resistance. Study of the ophthalmic use of antibiotics other than vancomycin for the treatment of enterococcal infection should continue because of increasing resistance to antibiotics.

The overall incidence of Enterococcal infections has, in general, been on the rise for the last several decades.

**Table 1: Antibiotics Sensitivity for Right Eye Swab Culture (Moderate Growth of Morganella Morganii)**

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Morganella Morganii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>Resistant</td>
</tr>
<tr>
<td>Amikacin</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Piperacillin/Tazobactam</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>Resistant</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>Resistant</td>
</tr>
<tr>
<td>Trim/Sulfa</td>
<td>Resistant</td>
</tr>
<tr>
<td>Aztreonam</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Moxifloxacin</td>
<td>Resistant</td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>Sensitive</td>
</tr>
</tbody>
</table>

**Table 2: Antibiotics Sensitivity for Right Eye Swab Culture (Moderate Growth of Enterococci)**

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Enterococci</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>Resistant</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>Sensitive</td>
</tr>
</tbody>
</table>

**Figure 2: Corneal Epithelial Defect Reduced to 1 mm and Hypopyon Disappeared**

**CONCLUSION**

Ophthalmologists are encouraged to be aware of the potential risk of complicated mixed microbial keratitis from the environment, particularly in communities with a high level of antimicrobial resistant reservoirs. Enterococci and Morganella morganii although uncommon cause of complicated infection, a high index of suspicion and coordination between clinicians and microbiologists is required in order to achieve a better outcome.

**Author Contribution:** All authors share equal effort contribution towards (1) substantial contribution to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of manuscript version to be published. Yes.

**Potential Conflicts of Interest:** None.

**Competing Interest:** None. **Sponsorship:** None.

**Submission Date:** 26 August 2015.

**Acceptance Date:** 14 February 2016.

**Ethical Approval:** Approved by the Research Committee, Salmaniya Medical Complex, Kingdom of Bahrain.
REFERENCES