Objective

Corneal ulcers are vision-threatening infections and contact lens (CL) wear is known to be the most significant risk factor for the development of corneal ulcers in adults. Trauma is another important risk factor in both children and adults. As CL wear becomes more common in younger patients, it is important to understand the risk factors for development of corneal ulcers in children. Studies involving contact lens related ulcers (CLRU) have been well established in adult populations, but not as well characterized in pediatric populations. We sought to characterize a large population of pediatric patients diagnosed with CLRUs over a 10-year time period.

Methods

A retrospective chart review was performed for all patients diagnosed with a corneal ulcer between January 2006 and December 2015 in a single pediatric ophthalmology clinic by searching for the CPT code “corneal ulcer.” Corneal ulcers were defined as follows:

1) Non-viral corneal infiltrate WITH epithelial defect treated with topical Fluoroquinolones and/or fortified antibiotics at least QID

OR

2) Non-viral corneal infiltrate WITHOUT epithelial defect treated with topical Fluoroquinolones and/or fortified antibiotics at least Q2H

Data was gathered on age, visual acuity, CL habits, culture results, and ulcer location. Ulcer location was classified as central (within 2mm of fixation), peripheral (within 2mm of the limbus) or paracentral (the intervening zone). Ulcer location was also documented with relation to the horizontal corneal midline (Figure 1). Statistical analysis was performed with a chi-squared test and a significance level of 0.05.

Results

119 charts were reviewed and 87 patients with 88 corneal ulcers were identified. One patient had bilateral ulcers. 70% (62/88) of ulcers were associated with CL wear. The mean age was 15.3 years (range 11 - 21 years) among CLRUs and 8.8 years (range 5 months - 18 years) among non-CLRUs. 60% (37/62) of patients with CLRUs reported sleeping in their lenses. 10% (6/62) of ulcers were diagnosed in emmetropic patients wearing cosmetic lenses.

Visual Acuity in CLRUs

- Pre-treatment: 20/40 or better
- Final: 20/50 to 20/100
- Not cultured

Culture Results in CLRUs

- Not cultured 66%
- Cultured 34%
- Positive 10%
- Negative 10%
- Conformer 10%

Organisms of Culture-Positive CLRUs

- Pseudomonas species 6/9 (66%)
- Methicillin-sensitive staph aureus 2/9 (22%)
- Coagulase negative staph species 1/9 (11%)

Etiologies of Non-CLRUs

- Exposure keratopathy 6/26 (23%)
- Unknown 5/26 (19%)
- Trauma/foreign body 6/26 (23%)
- Associated chalazion 1/6 (16%)
- Phlyctenulosis 2/6 (33%)
- Immunocompromised patient 1/6 (16%)
- Trichiasis 1/6 (16%)
- Facial burn 1/6 (16%)
- Microphthalmos w/ conformer 1/6 (16%)

Conclusions

The majority of corneal ulcers seen in our clinic have been associated with contact lens wear and the final visual acuity was 20/40 or better in 88% of patients. The majority of CLRUs were located above the horizontal corneal midline, whereas most non CLRUs were located centrally or below the corneal midline. This finding was statistically significant and has not previously been described in the literature. CL wear remains an important risk factor for the development of corneal ulcers and practitioners should emphasize the importance of appropriate lens hygiene with patients.

References