Introduction

- Meibomian gland dysfunction (MGD) is characterized by hyper/hyposecretion and/or obstruction of the meibomian glands (MGs) orifices. Long-term MGD results in MG atrophy, termed MG dropout.1
- Meibography is the imaging of the MGs and allows the assessment of MG dropout.2,3
- Two devices capable of performing meibography are the Keratograph 4® (K4) and Keratograph 5M (K5M) (OCULUS, Wetzlar, Germany).

Methods

- Forty participants were enrolled in this randomized prospective single-visit study:
  - Case history, to obtain health and demographic information,
  - Biomicroscopy of eyelid margin, assess gland expressibility, telangiectasia, etc.,
  - Meibography with K4 and K5M.
- Both the inferior and superior eyelid of one randomly selected eye was imaged three times each on the K4 and the K5M of each participant.

Methods (cont’d)

- The four point integer grading scale described by Arita et al4 was used to assess MG dropout: Grade 0: no dropout, Grade 1: less than 1/3 total area dropout, Grade 2: 1/3 to 2/3 total area dropout, Grade 3: 2/3 or greater total area dropout.

Results

- The frequency of agreement histograms indicate that the two observers agreed at a rate of approximately 70%.
- The corresponding frequency of agreement histograms indicate that the two observers agreed at a rate of approximately 70%.

Results (cont’d)

- Using the grading scale described by Arita et al4 with the K4 and K5M to grade MG dropout, the two observers graded within -1 to +1 grades of each other and against themselves 95% of the time.
- The high rate of agreement suggests that a scale of finer sensitivity (e.g. using 0.5 increments) may be used to better detect small changes over time or between participants.
- Although the two observers showed similar repeatability using the K4 and K5M, both observers showed slightly higher intra-observer repeatability with the KSM.

Conclusion

- Meibography is the imaging of the MGs and allows the assessment of MG dropout.2,3
- Two devices capable of performing meibography are the Keratograph 4® (K4) and Keratograph 5M (K5M) (OCULUS, Wetzlar, Germany).

TABLE 1: Comparison of K4 and K5M repeatability showing slightly higher intra-observer repeatability based on concordance correlation coefficients (CCC) for the KSM.

<table>
<thead>
<tr>
<th></th>
<th>Inter-observer</th>
<th>Intra-observer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>0.81 ± 0.58</td>
<td>0.80 ± 0.57</td>
</tr>
<tr>
<td>Day 2</td>
<td>0.68 ± 0.49</td>
<td>0.69 ± 0.51</td>
</tr>
<tr>
<td>Observer 1</td>
<td>0.16 ± 0.51</td>
<td>0.18 ± 0.47</td>
</tr>
<tr>
<td>Observer 2</td>
<td>0.01 ± 0.95</td>
<td>0.10 ± 0.88</td>
</tr>
<tr>
<td><strong>K5M</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>0.67 ± 0.40</td>
<td>0.68 ± 0.41</td>
</tr>
<tr>
<td>Day 2</td>
<td>0.74 ± 0.58</td>
<td>0.76 ± 0.54</td>
</tr>
<tr>
<td>Observer 1</td>
<td>0.77 ± 0.78</td>
<td>0.79 ± 0.78</td>
</tr>
<tr>
<td>Observer 2</td>
<td>0.82 ± 0.92</td>
<td>0.80 ± 0.90</td>
</tr>
</tbody>
</table>

References


Acknowledgements

We would like to thank OCULUS for providing the instrument for this study. © 2013 CCLR – Centre for Contact Lens Research, University of Waterloo. All rights reserved. All data and images were collected, compiled and are exclusively owned by the CCLR. Unauthorized utilization, editing, reproduction or distribution of this poster or any part thereof is strictly prohibited.

Email contact for corresponding author: wngo@uwaterloo.ca