Contact Lens Update
CLINICAL INSIGHTS BASED IN CURRENT RESEARCH

Increased numbers of Demodex in contact lens wearers

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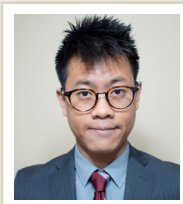

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As Etty Bitton points out in her editorial, the presence of *Demodex* on the eyelashes has been linked to ocular discomfort and a number of clinical signs and conditions. For example, the prevalence of ocular *Demodex* infestation is higher in patients with blepharitis than it is for control subjects,[1-3] and the risk factors for *Demodex* include age,[1, 3] male sex,[3, 4] blepharitis,[2, 5] chalazia,[6] and rosacea.[7] Both improper hygiene[3] and immunodeficiency[7] have been suggested as factors contributing to *Demodex* infestation. The following review highlights the results of a study designed to determine if *Demodex* infestation was higher in contact lens wearers, and whether there is a quantifiable association between *Demodex* and ocular health.

Jalbert I, Rejab S. Increased numbers of Demodex in Contact Lens Wearers. Optom Vis Sci 2015;92(6): 671-8.

Methods

This was a cross-sectional study that enrolled 40 females with or without ocular discomfort. Half the group consisted of contact lens wearers and the other half were subjects who had not worn lenses for at least six months. The presence of Demodex was confirmed using two methods:

The first method involved scanning the base of the eyelashes with a confocal microscope and for the second method, a total of eight lashes (two per eyelid) were epilated and mounted on a glass slide with fluorescein and examined under light microscopy. With both methods, the number of Demodex mites present was counted. The clinical outcomes tested were symptoms, collected using three questionnaires: the Ocular Surface Disease Index (OSDI),[8] Ocular Comfort Index (OCI)[9] and the Dry Eye Questionnaire (DEQ)[10]). The following measurements were also taken: tear osmolarity using the TearLab Osmolarity System,[11] fluorescein tear stability, biomicroscopy of the eyelid margin, corneal/conjunctival staining, lid wiper epitheliopathy[12] and meibomian gland function.[13]

Results

The confocal microscope detected *Demodex* more effectively than the light microscope. In both cases, *Demodex* numbers were found to be higher in contact lens wearers than non-lens wearers. Confocal microscopy detected *Demodex* in 18 of 20 the lens-wearing participants, and in 13 of 20 non-lens wearing participants. The average number of *Demodex* detected per eight lashes were 7.6±5.8 mites in contact lens wearers and 5.0±3.1 mites in non-lens wearers.

There was no difference in symptoms between *Demodex*-positive and *Demodex*-negative participants in either

groups (with the exception of the DEQ score in the non-lens wearers; however, only two people were *Demodex*-negative). The authors also did not find an association between *Demodex* numbers and symptoms. Furthermore, there was no statistically significant difference between the *Demodex*-positive and *Demodex*-negative groups in terms of osmolarity, tear stability, meibomian gland function, corneal/conjunctival staining or lid wiper epitheliopathy, for both lens and non-lens wearers. Interestingly, while not statistically significant the authors found lower tear osmolarity and better tear stability in *Demodex*-positive individuals than *Demodex*-negative individuals in the non-lens wearing group.

Discussion

The authors suggest a number of reasons why confocal microscopy detected higher numbers of *Demodex* than light microscopy. The confocal microscope has a higher magnification than a light microscope, which may facilitate easier identification of *Demodex*. In addition, the confocal microscope scans the base of the lashes directly without needing to epilate lashes. Epilating lashes, as required by light microscopy, may not remove all the *Demodex* from the follicle, and could lose some mites during transfer to a glass slide for viewing. Both methods were also able to identify *Demodex* eggs in addition to the mites.

The reason why contact lens wearers harbor higher numbers of *Demodex* remains unknown at this time. The authors believe it may be due to a higher microbial bioburden[14] associated with contact lens wear. Blepharitis, from the accumulation of excessive bacteria may bring about a more favourable environment for *Demodex* to inhabit.[1, 4, 7] Despite this finding however, the authors were not able to establish a clear association between symptoms, signs of eye disease and *Demodex* numbers.

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