What exactly is lid wiper epitheliopathy?

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History

Lid Wiper Epitheliopathy (LWE) was first described in 2002 by Don Korb and collaborators. They observed that 80 percent of subjects with symptoms of dry eyes exhibited staining with sodium fluorescein and rose bengal dyes on a portion of the upper eyelid that contacts the globe. Of asymptomatic subjects, 87 percent exhibited no staining in the same area. These results were confirmed by another group.

Where is the lid wiper?
The lid wiper is the area of the eyelid located posterior to Marx line, at the contact point where the upper lid wipes the surface of the anterior eye. The line of Marx is the mucocutaneous junction between palpebral conjunctiva and the eyelid just posterior to the meibomian glands, is around 0.1mm wide, and visible upon upgaze without lid eversion, Figure 1. Conversely, in order to visualize the lid wiper (0.4-0.6mm in width), the eyelid must be everted.

Why does staining occur?
It is assumed that when the ocular surface is dry, there is associated friction on the epithelium at the point of contact. With the mechanical trauma, there is also inflammation which causes staining of the lid wiper epithelium, Figures 2 and 3.

What is the significance?
Since Korb’s seminal paper, there has been significant attention paid to this new clinical sign. LWE was statistically worse after 6 months of silicone hydrogel contact lens wear, indicating that it is factor in contact lens-induced dry eye, and could relate to contact lens induced dry eye. As most dry eye disease is diagnosed via history and symptoms, LWE has been found to significantly correlate with symptoms of dry eye (Ocular Surface Disease Index[OSDI]), establishing another clinical sign that correlates to symptoms.
Anything we can do about it?
Treating the signs of LWE is possible by using lipid emulsion artificial tears (to decrease the frictional effect), punctal plugs, and ointment at night. Decreasing the modulus of contact lenses may also improve signs of LWE. Recent work has shown that topical Rebamipide (Mucosta® ophthalmic suspension UD2 percent; Otsuka Pharmaceutical Co, Ltd, Tokyo, Japan) specifically treats LWE.\(^6\) However, topical Rebamipide is not available yet in the U.S.

References:
2. Yeniad B, Béringioglu M, Bilgin LK. Lid-wiper epitheliopathy in contact lens users and patients with dry eye. Eye Contact Lens 2010;36:140-143.

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