



Dry but why?

Dry eye is a complex and often intractable condition that concerns all eye care practitioners. *Optician* looks at the latest research

New information on the incidence, assessment and management of dry eye appears in the American Academy of Optometry's journal *Optometry & Vision Science* (August).

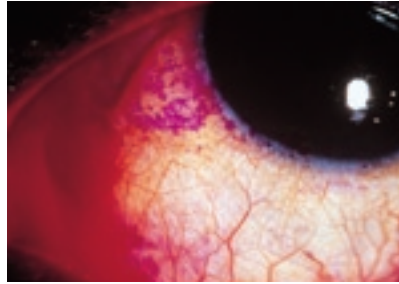
The latest results from the large-scale Beaver Dam Eye Study in the US include new data on dry eye in an older population and show that while incidence is substantial there are few associated risk factors.¹ Over a 10-year period, 22 per cent of subjects aged 43-86 years developed a history of dry eye and incidence increased significantly with age. As expected, women were more prone to dry eye than men (25 per cent vs 17 per cent). Surprisingly, incidence was significantly lower in subjects consuming alcohol.

Multivariate analysis showed increased incidence was associated with age, female gender, poorer self-rated health, antidepressant or oral steroid use, and thyroid disease untreated with hormone. It was lower for those using angiotensin-converting enzyme (ACE) inhibitors (for hypertension or other cardiovascular disorders) or with a sedentary lifestyle.

Overnight tear film changes

To date, few studies have correlated the overnight effects of the precorneal tear film (POTF) with subjective symptoms. A recent study at the University of Waterloo, Canada, investigated POTF volume and stability, bulbar hyperaemia, tear ferning and subjective symptoms, pre- and post-sleep.² Normal subjects and dry eye sufferers were evaluated at 10pm, on waking at 7am, and then hourly until 10am. With the exception of burning, all other symptoms (comfort, dryness, clarity of vision, and grittiness) revealed a significant overnight change within each group, but not between groups.

Tear meniscus height and bulbar hyperaemia were elevated on waking and differed between test times for each group, but not between groups. Non-invasive break-up time (NIBUT) was lower for the dry eye group; the non-dry eye group did not significantly alter over time, but the dry eye group had a longer



Mild staining with rose bengal in keratoconjunctivitis sicca Image courtesy of J Kanski, *Clinical Ophthalmology*, Butterworth-Heinemann

NIBUT in the morning. Tear ferning showed a degraded pattern on waking for both groups. Most parameters rapidly reverted to baseline levels once the tear film was allowed to refresh.

Dry eye questionnaires

Researchers at Waterloo examined the use of questionnaires to evaluate dryness symptoms.³ The aim was to establish the relationships between commonly used questionnaires such as the Dry Eye Questionnaire, McMonnies Questionnaire, and Ocular Surface Disease Index. Non-CL wearing subjects were classified into dry or non-dry eye groups using a single score from an initially applied subjective evaluation of dryness symptoms. Each test separated the symptomatic and asymptomatic groups well and there were significant associations between the results from each questionnaire. The data also point to the utility of a quick, three-question screening tool in dry eye research.

A less familiar method of assessment is the 'Impact of dry eye on everyday living' (IDEEL) questionnaire, investigated by US researchers.⁴ This questionnaire has three modules: 'Symptom bother' (SB), quality of life, and treatment satisfaction. The study tested the use of the 20-item IDEEL-SB module to discriminate self-assessed severity in dry eye subjects.

The results showed that a 12-point change in IDEEL-SB represents a 'clinically important difference' in symptoms.

Silicone hydrogel studies

Two studies published in this issue looked at aspects of dryness and comfort with silicone hydrogel (SiH) lenses. The first looked at the effect on dryness symptoms of refitting hydrogel wearers with lotrafilcon A or B lenses.⁵

Prevalence of frequent dryness

symptoms was compared between age-matched hydrogel and non-wearers from a dataset of Dry Eye/Contact Lens Dry Eye Questionnaires. Prospective change in prevalence of frequent dryness from studies in which hydrogel wearers were refitted with lotrafilcon A or B lenses was then compared to the difference between hydrogel wearers and non-wearers.

After refitting, the proportion of symptomatic wearers was approximately half; an amount similar to the difference between hydrogel and non-wearers. The authors say this raises the possibility that refitting hydrogel wearers with SiHs eliminates the component of dryness induced by hydrogel lens wear.

The second study investigated the influence of in-eye lubricants on post-insertion and six-hour comfort.⁶ Experienced CL wearers wore a low Dk lens in one eye and a SiH in the other. Four trials involved no lubricant, saline, and two lubricants of differing viscosity. Lubricants were used immediately after insertion and every two hours after insertion over six hours. Post-insertion comfort was significantly better for both lens types when lubricants or saline were used compared with no lubricant use. After six hours' wear, comfort was influenced by lens type and not by in-eye lubricant or saline use. Less dryness sensation was reported for SiHs when using lubricants but not saline. The authors conclude that lubricants help reduce dryness symptoms with SiH wear, but there appears to be minimal longer-term benefit to comfort. Increased lubricant viscosity did not lead to improved longer-term comfort.

Other papers in this special issue examine the use of various dry eye treatments and include a study by researchers at Cardiff University of carbomer and sodium hyaluronate eyedrops. ●

References

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