DRY EYE

Common people

Bill Harvey assess the ocular surface of three different patients, each showing some form of dry eye disorder, and presents the results for you to consider

Over the past two weeks, I have been gathering data from a range of patients who have one thing in common. At some point in the recent past, they have complained of their eyes feeling dry, gritty, tired or smeary. Here, I aim to go through the assessment routine I have been using and then present the results from three quite different patients.

HISTORY AND SYMPTOMS

Symptoms related to dry eye are so ubiquitous that many patients do not even report them unless specifically asked. It is easy to test this theory. If you ask 'do you have any symptoms such as grittiness or dryness?' most people with troublesome symptoms will respond positively. But not all. By changing the question to, 'at what time of the day do you notice your eyes starting to feel gritty or dry?' it is certain that more will report symptoms. Add a further question, 'do you notice any dry or gritty symptoms when doing anything in particular, such as driving, outdoors, computing, cinema or outdoor activity?' and more symptomatic patients might be identified.

Symptomatology is very much based on subjective viewpoint and simple semantics may reveal differences in how significant any symptom is felt to be by different patients. Another influence, and one I am very much aware of at present, is what a particular patient might expect from you. For example, someone attending a dedicated dry eye clinic, or perhaps for a contact lens aftercare appointment, might be expecting to be asked about ocular comfort and might also be encouraged to report a symptom that in other circumstances (or with a different health professional) might seem trivial. However, when attending for a glaucoma review, a diabetic screening or a low vision appointment, even severe dry eye symptoms might be missed as the patient does not feel it appropriate to mention them – even though this might be the only time they see an eye care professional rather than a non-specialised clinician for quite some time.

Another point is to always remember that, when preparing to address an ocular surface concern, a full understanding of the environment in which the patient lives and works is essential. To develop a complete picture actually takes a longer time than might be expected.

There are many ways of quantifying symptoms. This is useful if expecting to introduce something that improves, if not alleviates altogether, the symptoms. Numerical values are useful for recording purposes, but also offer the patient an understandable indication of any progress made. The usual way this is done is to use some form of symptom-based questionnaire.

OSDI

I am currently using the IDRA system and this incorporates an electronic version of the Ocular Surface Disease Index (or OSDI) questionnaire. The OSDI was first developed by Allergan, and scores dry eye on a scale of 0 to 100, with higher scores representing greater severity. Studies have since verified the Index as being 'from good to excellent' in terms of reliability, validity, sensitivity and specificity.[1,2]

The first five questions ask about symptoms (such as light sensitivity, grittiness and blur) over the preceding week and then asks the patient to rate them in severity. The next four questions ask about any impact on activities, such as driving at night and computer work. The last three questions try to isolate specific environments that may influence dry eye, such as windy conditions or air-conditioned rooms.

The IDRA (figure 1) has an onscreen version of the questions and quickly calculates the score and saves it to the date for the patient.

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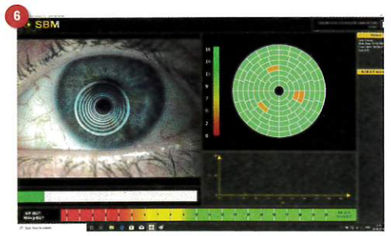

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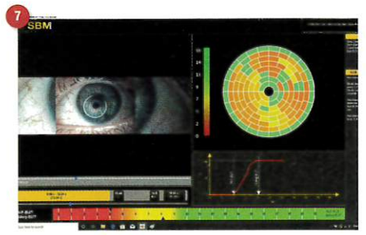

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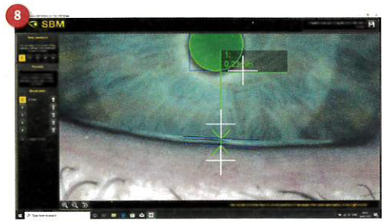

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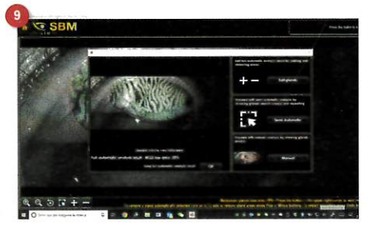

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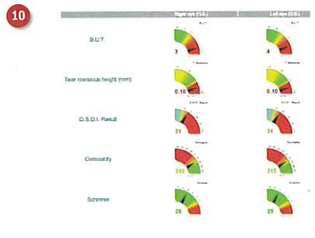

OSMOLARITY

There are some readings that the IDRA requires to be measured by other means and then uploaded into the patient data. Osmolarity is one of these and, since it gained prominence in the latest TFOS DEWS2 definition of dry eye disease, has increasingly become a standard measurement in the assessment of the ocular surface. I have been using the iPen osmolarity system (figure 2). Because this relies upon maintaining direct contact between the lower palpebral conjunctival surface and the disposable probe, I have taken a while to become proficient enough to avoid too much patient discomfort. On initial use, this was a concern and any resultant reflex tearing was a likely source of error.

Obviously, the higher the osmolarity, the higher the concentration of solutes in the tears. Figure 3 shows a dry eye osmolarity scale and table 1 shows the defined limits of individual and inter-eye values when defining dry eye disease.

TABLE 1

Reading in mOsms/L (Use result from eye with highest reading)	Variance between right and left eye	Interpretation
<290		Normal patient
290-310	≤7	Normal patient
290-310	≥8	Dry eye disease patient
>310		Dry eye disease patient

IDRA

All other values were taken using the IDRA, and typically were:

- Interferometry
- Blink analysis (figure 4 and 5)
- Non-invasive break-up time (figure 6 and 7)
- Tear meniscus height (figure 8)
- Meibomian gland drop out (figure 9)
- Break up time with fluorescein

Anterior surface and lid appearance was imaged and this allows a grade to be recorded for clinical signs such as hyperaemia, lid patency and level of blepharitis if present.

RESULTS

Figure 10 shows a report from one of the three patients we will take a closer look at. The benefit of such a report is to make explanation of each related influence or health marker easy for the patient to understand and see in future any change towards the green if improvement results. From a clinician point of view, it soon becomes easy to spot patterns of results. For example, an excellent OSDI result may be considered less reliable if not matched by objective measurements – or may indicate 'signs with symptoms'. In the next feature in this short series, I will show the full results for this patient and explain the plan of action decided upon.

REFERENCES

1 Data on file, Allergan, Inc.
2 Schiffman RM, Christianson MD, Jacobsen G, Hirsch JD, Reis BL. Reliability and validity of the Ocular Surface Disease. Index. Arch Ophthalmol. 2000;118:615-621