Use your ears (not your eyes) to identify CL-related dryness

Dr Robin Chalmers and Dr Carolyn Begley describe their questionnaire-based assessment of dry eye symptoms among contact lens wearers

DRYNESS AND discomfort with contact lenses are extremely common, affecting nearly half of all soft lens wearers. The large number of sufferers, estimated at nearly one million in the UK alone, should be strong motivation for eye care practitioners to re-examine and refine their approach to diagnosing and treating the problems of their symptomatic contact lens patients (Figure 1).

Contact lens patients who are experiencing a less than optimum lens wearing experience not only have a negative experience, but are at higher risk of limiting their wearing time and abandoning lenses altogether. It has been reported that most patients who discontinue contact lens wear were in their mid-20s when they began lens wear and stopped within the first two years of wear.1 The investment of chair time with a patient who soon discontinues lens wear is lost if their comfort problems are ignored or glossed over. Through the past decade the authors have been researching the measurement of ocular surface symptoms and developing methods to specifically elicit them in dry eye patients and contact lens wearers alike. A number of our research experiences have reshaped our thinking on how practitioners should approach mild to moderate dry eye and CL-related dryness with a new level of forethought. This article will outline some findings that support reasons to better diagnose contact lens related dryness and point to effective strategies for treatment.

In 1998 the authors, along with a collaborative research team, studied over 1,000 unselected clinical patients presenting in six clinical centres in North America.2 We distributed the newly developed Dry Eye Questionnaire and Contact Lens Dry Eye Questionnaires (DEQ and CLDEQ) to these patients presenting for all types of eye care in order to establish population norms for ocular surface symptoms. Surveying patients who were not selected for their dry eye diagnosis is the best method to determine the breadth and seriousness of the problem of ocular dryness in the population overall, as well as establishing normal symptoms reported by patients who do not suffer from dry eyes. These symptom norms can then be compared to symptoms among groups of patients with various types of dry eye to see if their symptoms alone can distinguish them from patients without dry eye diagnoses. Although they are not a group with a dry eye diagnosis, per se, we studied the contact lens wearers as a distinct group to compare with non-lens wearers.

The DEQ and CLDEQ questionnaires thoroughly query a number of habitual ocular surface symptoms, contact lens wearing history and habits, along with other lifestyle factors that were suspected to influence dryness symptoms. Figure 2 shows a sample symptom question. The frequency of each symptom is first established and, if that symptom is reported at all, the intensity at the beginning and end of the day is gathered. At the end of the survey we asked patients whether they had a practitioner or self-diagnosis of dry eye as a global indicator of their condition. The power of practitioner and self-assessment of dry eye have been analysed to show that practitioners often underestimate the patients’ perception of the dry eye condition in both contact lens wearers and non-wearers alike.3 Nearly 40 per cent more contact lens wearers self-described themselves as having dry eye (17.7 per cent) compared to the number who had been told they had dry eye by their practitioner.2 Patients who self-diagnose but aren’t given a practitioner diagnosis represent patients whose needs are not being met by their eye care providers.

Among the 1,054 subjects surveyed there were 367 current contact lens wearers and 181 former contact lens wearers (26 per cent of those who were not currently wearing lenses). When asked their reasons for discontinuation of lens wear, the former contact lens wearers cited dryness and discomfort late in the day as their top two reasons. As shown in Table 1, four of the top five reasons related to ocular surface sensations rather than experience, cost or other reasons unrelated to lens comfort. These results are in agreement with researchers from the University of Waterloo, Ontario, Canada, who found that 50 per cent of the patients cited discomfort or dryness as the reason for discontinuation. They also reported that patients who discontinued lens wear had a reduced wearing time compared to successful wearers.4 A more recent
study conducted in the UK concurred, finding that 51 per cent of the subjects cited discomfort as the principal reason for giving up lens wear.5

HOW PATIENTS COPE WITH DRYNESS SYMPTOMS

Our study of unselected patients showed that, compared to non-wearers, the contact lens wearers reported significantly more frequent and intense symptoms, particularly discomfort and dryness late in the day as shown in Figures 3a and 3b. In another section of the questionnaire we asked about symptoms when contact lens wearers were not wearing their lenses and found that these patients’ symptoms were greatly relieved by removal of their lenses: no surprise to the clinicians on the team. Frequent to constant dryness was reported by 26.8 per cent of subjects while wearing lenses and only 6.2 per cent without their lenses in place, a significant reduction (Figure 4). Fifty-five percent of the contact lens wearers also reported symptoms that were triggered by environmental factors of smoke, smog, air conditioning or central heating, much higher than among the non-wearers. Contact lens wearers avoid these environments if their lenses exacerbate their dryness.

Thus, the clinical picture for CL-related dryness comprises a vast majority of patients whose eyes are fairly free of symptoms without lenses that become quite symptomatic during contact lens wear. As shown in Figure 5, the typical contact lens wearer manages their dryness symptoms primarily by removing their lenses (55.3 per cent), use of contact lens rewetting drops (47.1 per cent) or artificial tears (14.8 per cent). Patients who reported that they remove lenses cited dryness as the most common reason for lens removal. Removing lenses did work to relieve symptoms; it was reported to be completely effective by 47.4 per cent of patients who practised this coping strategy. Alternatively, rewetting drops were rated as giving complete relief by 22.3 per cent and artificial tears by a paltry 4.9 per cent of those who used them.

There is definitely room for improvement in terms of treatment effectiveness for contact lens related dryness.

How can a clinician predict or avoid contact lens related dryness in their contact lens patients? First we must understand the varied factors that can influence or cause sensations of dryness on the ocular surface, with or without contact lenses.

FACTORS THAT INFLUENCE CL-RELATED DRYNESS

Contact lens wearers in the new millennium lead lives that include many work or lifestyle factors that may negatively impact their comfort with contact lenses. As a group, contact lens wearers are growing older, wear lenses for long wearing days, may live or work in challenging arid environments, and use more over the counter medications with drying side effects than in previous decades. Most likely they commute longer distances to work, drink more coffee and other caffeinated beverages, fly more frequently and spend many more hours in front of computer screens for work and recreational purposes than patients in the 1980s and 1990s (Table 2). All these factors may drive dryness sensations in contact lens wearers. As outdoor air becomes more polluted, indoor air quality deteriorates even though it is more highly conditioned. Patients’ eyes are being bombarded with factors that may make their ocular surface less than ideal for contact lens wear.

The self-reported use of medications among contact lens wearers that have drying side effects from our 1998 study is shown in Table 3. Since that time, a number of widely used drugs have come on the prescription or over-the-counter market.
market, including loratadine (eg Claritin) for the self-prescribed treatment of allergies. Over-the-counter antihistamines and similar compounds are known to have drying effects on the ocular surface that are the cause of increased symptoms. These drugs are use by millions of patients and represented a global market of over £2.9bn in 2000 according to IMS Health’s World Review. Very often the patient has no choice but to seasonally use oral antihistamines while wearing lenses if they choose to be a full-time wearer even though they may exacerbate symptoms of dryness. The use of anti-depressant medications is also on the rise among adults. The IMS Health’s World Review states that anti-depression medications account for the third largest class of medications sold, amounting to £7bn, with a growth of 18 per cent over the previous year. In addition, older contact lens wearers, many of whom are now well past their 40s but still dedicated to continued use of their contact lenses, are more likely to use a plethora of pharmaceutical agents to treat conditions related to advancing age, such as hormone replacement medications in women, diuretics or hypertension treatment in men.

The amount of time contact lens patients spend using computer screens has also increased dramatically over the past few years. Use of computer screens reduces the blink rate, resulting in surface drying of lenses and the discomfort sequelae that follow. In our study of unselected patients, we found that 26.4 per cent of contact lens wearers used a computer for more than six hours per day while at work in addition to their recreational computer use. The penetration of home computers, mobile personal data devices and cell phones with input or text screens has grown exponentially in the past few years in the UK market. For example, the proportion of UK households with a home computer rose from 38.0 to 65.3 per cent in the time period from 2000 to 2004, according to recent Organization of Economic Cooperation and Development statistics. Time spent on recreational computer use likely rose proportionally.

**TABLE 3**

Self-reported medication use by contact lens wearers

<table>
<thead>
<tr>
<th>Medication</th>
<th>Per cent of CL wearers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral antihistamine</td>
<td>35.6 per cent</td>
</tr>
<tr>
<td>Oral contraceptives</td>
<td>15.2 per cent (of females)</td>
</tr>
<tr>
<td>Depression medication</td>
<td>6.4 per cent</td>
</tr>
<tr>
<td>Thyroid medication</td>
<td>3.9 per cent</td>
</tr>
</tbody>
</table>

**TABLE 4**

Key points in contact lens-related dryness

- Examine patients with contact lens related dryness primarily with your ears!
- Patients who have symptoms but no treatment represent an unmet need
- Ask patients about the number of hours of comfortable lens wear vs total hours
- Fifty-five per cent of CL wearers have symptoms triggered by smoke, central heating or A/C
- Fifty-six per cent of CL wearers relieve dryness symptoms by removing lenses
- Lens wearers are older, more medicated, spend more time with computers than in the past. New demands require new treatments!

**PRACTITIONERS’ BEST STRATEGY**

Because of changes in these lifestyle factors that may reduce a person’s chance of success with contact lenses, we propose that practitioners begin a more active, probing discussion about ocular surface symptoms as part of their routine case history for new and current contact lens wearers. To illustrate how to conduct a more problem-oriented, revealing case history, let us examine an analogous problem in vision care; presbyopia. If a 40-year-old emmetropic patient presents for examination without any vision complaints, how many practitioners would miss the opportunity to counsel the patient on the impending change in the person’s near vision? The answer is that very few of us would miss the opportunity. Because the practitioner is well-equipped with both knowledge of the process of presbyopia and tools with which to treat it (even if there is no treatment required at the moment), the practitioner will usually discuss the condition because the patient will benefit from knowing what is about to happen to their vision in the near future. Knowledge on the part of the patient will reduce worry and stimulate them to seek treatment when their declining near vision does become bothersome.

Similarly, if practitioners have familiarised themselves with knowledge about contact lens-related dryness and are familiar with effective options with which to treat those contact lens wearers (ie more lubricious lens materials, non-toxic care systems, tear replacements) they will very likely be more willing to initiate a guided discussion about dryness symptoms with their contact lens patients. Nowadays there are soft lens materials on or coming to market that have been designed with physical properties that relieve or reduce symptoms of dryness in many contact lens wearers. Symptoms that may have posed a stubborn, intransitve problem in the past may now be effectively treated, reinforcing the value of routine eye care to the patient. Now is the time for practitioners to revamp their diagnostic skills with regard to contact lens-related dryness.

**HOW TO EXAMINE PATIENTS WITH CL-RELATED DRYNESS? WITH YOUR EARS!**

Paradoxically, contact lens wearers who report frequent or intense symptoms of dryness do not look like patients with pathological dry eye. Very often they do not even have a rapidly drying lens surface between blinks as measured by non-invasive tear break-up times. A thorough, routine contact lens examination will reveal that most symptomatic contact lens patients have an adequate supply of tears, no frank inflammation and don’t exhibit significant signs of ocular surface damage that would be present in even moderate dry eye patients who do not wear lenses. Standard clinical tests that are used to diagnose pathological dry eye such as the Schirmer test, tear prism height, or the degree of corneal fluorescein staining don’t correlate very well with symptoms in dry eye sufferers. Because contact lens-related dryness is a problem with few clinical signs, the clinician must query and listen for, rather than look for, contact lens-associated dryness among their existing contact lens wearers. When clinical signs are within normal limits,
hours lenses are actually worn each day. A disagreement of more than two hours (total hours worn minus comfortable hours worn) indicate a patient who is struggling to wear lenses toward the end of the wearing day. We also suggest probing on late day symptom intensity since these were often reported by patients who globally described themselves as having dry eyes, even though their practitioners did not diagnose them as having dry eyes.

**CONCLUSIONS**

The key points in contact lens related dryness are summarised in Table 4. Many symptomatic contact lens patients present for eye care with eyes that appear normal but are causing symptoms of discomfort and dryness, especially late in the day. Bothersome symptoms affect approximately half of soft lens wearers and can be treated with lenses designed to reduce symptoms of dryness and careful choices of lens care. With new thinking and a few simple questions, practitioners can begin to tune their contact lens exams and product recommendations to be able to make use all the tools available to them to help their patients with contact lens related dryness symptoms.

The patient will certainly notice the extra care given and is likely to remain as a lens wearer for a much longer period of time.

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**References**


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