

Commentary on Dry Eye in Women

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Commentary

Dry Eye Disease is said to affect an increasing number of individuals around the globe. The recent Beaver Dam Offspring Study (BOSS) study tells us that in the US, Dry Eye Disease impacts one person out of every seven and has been estimated to affect up to 30 million Americans. The fastest growing group of people affected are men and women under the age of 40. The cause of this is the growing use of screen time on electronic devices, which naturally reduces our blink rate to a rate three times less than in normal face to face interactions. However, the lion's share of those suffering from Dry Eye have always been and continue to be peri- and post-menopausal women due to hormonal factors.

Menopause brings hormonal shifts that are commonly associated with hot flashes, mood changes, night sweats and vaginal dryness. The Women's Health Initiative study showed that at least 60% of peri- and postmenopausal women experience symptoms of dry eye as well. Studies on routine cataract patients (average age at the time of surgery is 65) also showed that 60% of those patients had signs of dry eye visible to their ophthalmologist even though the majority of them had no complaints.

It is known that the drop in androgen and testosterone during menopause are responsible for increasing the likelihood of dry eye in women. Testosterone and androgen support healthy lacrimal gland function and because women start out with less of both of these hormones than men, they are more susceptible to problems when their already low levels dip even further.

Autoimmune diseases that lead to dry eye occur more commonly in women. The incidence of Sjogren's syndrome, an autoimmune disease that causes dry mouth and dry eyes peaks around the time of perimenopause and may be directly related to androgen levels in the body according to researchers studying androgen deficiency and Sjogren's progression in mice.

Dry Eye Disease is now understood to be a chronic, progressive, inflammatory condition. The causes are multifactorial: screen time, preservatives in eye drops, contact lenses, LASIK, cosmetic lid procedures, use of electronic devices, medications, allergies and diets poor in omega 3s, to name a few. Systemic medications for common conditions like allergies, depression, hypertension and sleep disorders

can be particularly drying to the ocular surface. Dry Eye can also affect any layer of the tear: goblet cells that attract and hold watery tears to the surface, aqueous deficiency (lack of watery tears) or meibomian gland dysfunction (abnormal oily layer of the tear).

What we understand now is that, no matter how the Dry Eye starts, nor what part of the tear becomes dysfunctional, are all of the components of the tear film interconnected and ultimately affected. The cycle of inflammation is self-perpetuating and self-amplifying. Anti-inflammatory medications must be employed to alter the outcome of this disease.

With this understanding, we can see now that high quality omega-3s (fish oil) can be successful as the first line of defence as the omegas are incorporated into the Meibomian glands and help to protect the surface of the eye from evaporative changes. Beyond that, topical anti-inflammatories like ophthalmic non-steroidal, steroids and anti-inflammatory drops like cyclosporine and the more recently approved lifitegrast can also be helpful.

Hormonal replacement for dry eye symptoms can have a surprisingly negative effect on the ocular surface. Patients on estrogen only hormone replacement therapy like have a four to sevenfold increased risk of dry eye than those on combination hormonal therapy. Topical testosterone and androgen drops have not been successful in trials historically.

There are other treatments available for dry eye. Autologous serum tears using growth factors from the patients' own blood and platelet rich plasma which concentrates the growth factors by an additional factor of four have been successful at reducing ocular pain related to dry eye. Intense pulsed light therapy has also been shown to help reduce the inflammation and improve symptoms related to dry eye. Scleral contact lenses and amniotic membranes have also been used to help trap moisture and heal damaged epithelium.

Emerging therapies for dry eye include vagal nerve stimulators, handheld light devices, small molecules targeting inflammatory mediators, and muco-adhesive vehicles for enhanced delivery. Although women disproportionately suffer with Dry Eye Disease, people of all ages and across the globe will benefit from improved therapies for dry eye.