

Dry eye disease

Dry eye disease is a common problem in the older population. Chronic dry eye disease is a serious disease with the potential to significantly diminish the quality of life on an older person.

In the Blue Mountain Eye Study symptoms of dry eye disease was reported in nearly 60 percent of people aged 50 years and older. One-sixth of participants reported moderate to severe symptoms, and dry eye disease was more frequent in women than men.

A history of arthritis, asthma, gout, use of corticosteroids, antidepressants and menopausal hormone therapy increases the risk of dry eyes. Lifestyle factors such as smoking, alcohol and caffeine use also impact on the incidence of dry eyes.

Definition

Dry eye disease is a multifactorial disease of the tears and eye surface that results in symptoms of discomfort, visual disturbance and tear film instability with potential damage to the ocular surface. It is accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiological roles.

Signs and symptoms

Common symptoms include dryness, grittiness, itchiness, foreign-body sensation, tearing, blurred vision and discomfort. Redness may also occur.

These symptoms result from a patient's inability to maintain a stable, continuous tear film over the eye surface. Although the eye produces tears, the quality is compromised, so the eye gets more inflamed, causing more blinking and tearing.

Symptoms are generally worse in the morning due to less blinking and tear production during sleep.

Persons with dry eyes may complain of photophobia (light intolerance). Apart from the unpleasant and bothersome symptoms, dry eye disease can lead to permanent surface damage, atrophy of the lacrimal glands, and increased eye infections. Dry eye disease is associated with an enhanced risk of corneal infection, and, when severe, can cause permanent visual impairment.

If left untreated, severe dry eyes may lead to eye inflammation, infection and scarring on the surface of the cornea.

Causes

Age-related physiological changes in an older person such as decreased tear production and less effective tears contribute to the high incidence of dry eyes in persons over 50 years.

Females are more prone to dry eyes due to changes related to menopause. Studies have shown that women have significantly less tear production as compared to men in their sixties.

Environmental factors such as low humidity, air-conditioning or excessive heating are often contributing factors. Smoking increases the risk of dry eye disease, possibly due to cigarette smoke acting as a direct irritant to the eyes. Extended time on electronic devices may also contribute to dry eye disease.

High caffeine intake may also increase the risk of dry eyes. A history of heavy alcohol use in the past is associated with an increased likelihood of dry eyes symptoms.

Refractive eye surgeries such as LASIK also may cause decreased tear production and dry eyes.

Disease-related causes

Some medical conditions may cause or increase the chances of developing dry eyes, including:

- Sjögren's disease
- Parkinson's disease
- blepharitis (inflammation of the eyelid margin)
- seborrhoeic dermatitis
- Vitamin A deficiency
- acne rosacea

Drug-induced dry eye disease

Medicines known to be associated with dry eyes include non-steroidal anti-inflammatory drugs (NSAIDs), any medication with anticholinergic properties such as antidepressants and antipsychotics, antihypertensive agents, benzodiazepines, diuretics and opioids. Decongestant and NSAID eye drops are also associated with dry eye.

Menopausal hormone therapy (MHT) is associated with dry eye disease. It is more common in women who receive estrogen therapy alone. Postmenopausal women taking estrogen alone were shown to be at a 70 percent higher risk of developing the disease; and 30% increased risk with combination estrogen/progesterone MHT.

Treatment

Treatment can reduce signs and symptoms but will not cure dry eye disease.

A wide variety of products are available for the treatment of dry eye disease. Treatment of dry eyes aims to restore a more normal tear film to minimize dryness, blurred vision and discomfort. Most people benefit from lubricant eye drops or artificial tears. Many over-the-counter, non-prescription products are available.

There is some evidence that a high dietary intake of omega-3 fatty acids may lower the risk of dry eyes.

Residents with mild disease are best managed with education about the disease and strategies for minimising its impact, preserved artificial tears, review of oral medications that might cause or exacerbate symptoms, and perhaps changes in the environment to alleviate the symptoms. Eye drops and lubricants can be used as often as necessary to relieve symptoms and often need to be used hourly.

In residents with moderate to severe dry eye, the more frequent use of preservative-free lubricants is recommended, with drops (e.g. *Refresh*, *Optifresh Plus*, *Celluvisc*, *Evolve Carmellose*, *Optive*, *Poly-Tears*, *Tears Naturale*, *Bion Tears*, *Systane*) during the day, ointment at night, and perhaps a gel formulation (*Poly Gel*, *Viscotears*, *Optifresh eye gel*) during the day if relief is not adequate with drops. Eye sprays (e.g., *Tearsagain*) contain phospholipid liposomes which are thought to stabilise the lipid layer of the tear film to reduce tear evaporation. They are sprayed onto closed eyelids (from about 10 cm away) and eyes briefly remain closed afterwards.

Some eye drops have increased viscosity which prolongs their duration of action, although may also cause visual blur. Gel formulations may cause an initial blur of about a minute, followed by 2 to 5 hours of significant symptomatic relief without visual compromise.

Paraffin is available as a lubricating agent as an eye ointment (*Poly Visc*, *Refresh Night Time*). Eye ointments are generally used only at bedtime, as they can impair visual acuity and blur vision.

Cyclosporin suppresses the inflammatory response associated with dry eye disease, resulting in increased tear production. Cyclosporin aqueous ophthalmic solution (*Cequa*) is now listed on the PBS for increasing tear production in moderate to-severe dry eye disease, where prior use of artificial tears has not been sufficient. It reduces signs of dry eye rapidly, as early as one month.

Lifitegrast eye drops (*Xiidra*) also suppress the inflammatory response associated with dry eye, with improvements seen within 14 days.

Summary

Dry eyes are a common source of discomfort among older people. Residents with dry eyes should have a comprehensive review of their medications. They should be encouraged to consume less caffeine and quit smoking, increase their water intake. While dry eyes do not usually affect vision, treatment should be offered to improve quality of life.

References

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