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Dry eye disease: An overview

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Dear Friends

Season's Greetings!!

Dry eye is a disease of the tears and eye surface that is multifactorial and results in discomfort, visual disturbances, and tear film instability with inherent potential to damage ocular surface.[1-3] It is associated with increased tear film osmolarity and ocular surface inflammation.[4-6] The pathogenic triggering mechanism includes infection, environmental factors, endogenous stress, antigens and genetic factors which cause stress on ocular surface. Matrix metalloproteinases, proinflammatory cytokines and chemokines cause proliferation of autoreactive T helper cells which further infiltrate lacrimal gland and ocular surface.[7,8] This results in vicious cycle of inflammation and ocular surface damage.

Dry eye increases with advancing age. Middle-aged patients and elderlies are the frequently affected group owing to increased use of contact lens, refractive surgeries, systemic drug effects and autoimmune diseases.[9,10] Various surveys report prevalence of dry eye between 5% to 30% in different age groups across the world.[11] The number of people suffering from dry eye is estimated to be around 25 to 30 million worldwide. Dry eye is reported to occur more commonly in females since at the age of 50–52 an imbalance occurs between sex hormones. Around 20% of patients suffering from rheumatoid arthritis suffer from dry eyes. Other individuals which are likely to be affected include patients with *Helicobacter pylori* infection and computer users.

The most common symptom of dry eye is dryness and gritty feeling in the eyes. There may also be complaints of burning, foreign body sensation, itching of eyes, excess tear, pain, redness and photophobia in few patients. In few cases there also occurs stringy discharge and blurred vision. Symptoms often worsen during dry weather along with higher temperature and low humidity.

Different diagnostic tests available for diagnosis of dry eye include Tear Film Breakup Time (TBUT <10 sec is diagnostic), Epithelial stain positivity, Schirmer's test 1 and 2, Tear Function Index (TFI), Tear osmolarity, Impression cytology, Symptoms questionnaires, Fluorophotometry, Tear Fluid Protein Immunoassay, Tear Ferning Test and meibometry, meibography or meiboscopy.[12]

Treatment options available depend upon severity of dry eye. The aim of treatment is symptomatic relief, improving subject's comfort, restoring tear film to normalcy and prevention of corneal scarring and sequelae.[13] Treatment may range from education, environmental or dietary modifications, artificial tear substitutes, autologous serum eye drops, nonsteroidal anti-Inflammatory drugs and antibiotics, punctal plugs, corticosteroids, cyclosporin, vitamin A, omega 3 fatty acids to surgery.

Newer drugs available for treatment of dry eye include diquafosol which acts by stimulating tear components, rebamipide an amino acid analogue of quinolinone causes mucin secretion and gefarnate ointment stimulates in vitro secretion of mucin like glycoprotein in conjunctival tissue and ameliorates corneal epithelial damage. Drugs under trial for dry eye include rimexolone 1%, rituximab, ecabet sodium, sirolimus or Rapamycin, rivoglitazone, difluprednate, thymosin beta 4 and cyclosporine. A majority of these potential new drugs control inflammation and restore normal tear amount, but none of them target root cause of the disease. Hence other effective therapeutic agents should be invented so that root cause of disease can be targeted.

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