Several eye diseases affect women disproportionally compared to men worldwide. Additionally, as the life expectancy is greater for women than for men, age-related diseases are encountered more in women simply because they live longer. Fortunately women, at least in the Western world, utilize and interact with the health care system more than men, offering opportunities for earlier diagnosis, referral, and prevention.

This review highlights some of the ocular diseases predominantly found in women and explores how eye care practitioners can communicate the associated risk factors more effectively to their female patients.

**VISION DISORDERS**

Uncorrected ametropia (myopia, hyperopia, astigmatism, and presbyopia) is a leading cause of visual impairment worldwide, estimated to affect approximately 237 million people in 2020, more predominantly women.

In the United States, older adults, women, and minority groups such as Hispanics and African Americans are the most vulnerable for visual impairment due to uncorrected ametropia. Uncorrected ametropia is easily correctable with a comprehensive eye examination and subsequent ophthalmic, contact lens, or surgical intervention. Education and screening programs should be targeted toward these communities to bring awareness of the loss of productivity and overall effect on the quality of life that vision impairment can have.

**OCULAR DISEASES**

**Dry Eye Disease**

Dry eye disease (DED) is a highly prevalent ocular disorder that predominantly affects women; it can be characterized by symptoms of ocular discomfort, dryness, fluctuating vision, and sensitivity to light progressing with age. DED can occur due to tear film deficiency, increased evaporation of existing tears, or a combination of both. It can also result from iatrogenic factors such as medication use,
contact lens wear, or ocular surgery. Cosmetics (mascara, eye shadow, eyeliner, eyelid creams, glue from eyelash extensions, etc.) contain numerous chemicals that can migrate into the tear film and affect ocular tissues, inducing or exacerbating DED. Advocating a daily lid hygiene routine for patients is therefore fundamental in maintaining the health of the lids and ocular surface.

Symptoms of DED correlate positively with risk for psychological disorders such as depression and anxiety, although the pathophysiologic mechanisms are not fully understood. Some studies have proposed a connection with serotonin function, a neurotransmitter involved in nociceptor sensitization and present in tears. Even sleep disorders have been identified as a co-morbidity of DED, more commonly found in women.

Sex hormones also play a part in DED, with low androgen levels associated with dry eye symptoms and higher testosterone levels associated with meibomian gland dropout. Changes in estrogen levels during the menstrual cycle or during menopause also negatively impact symptoms of DED.

Educating patients, especially women, on the numerous risk factors for DED, and screening for DED even at a young age, can help curb the effects of DED on quality of life. Furthermore, an interdisciplinary management approach can benefit DED patients, as there are numerous potential comorbidities.

Cataract

Cataract is the leading cause of visual impairment worldwide and is strongly correlated with age, affecting women more than men. Despite limitations of access to surgery in many countries, more women have cataract surgery than do men. This may be explained in part by women’s greater ability to express visual complaints affecting their lifestyle and by a greater tendency to seek health care advice.

There is variation in type of cataract between the sexes, with cortical and, to a lesser degree, nuclear cataracts being the predominant types in women. The potential role of estrogen, both endogenous and exogenous, in the development of cataract in women has been widely studied. A lower risk of cataract formation is reported in women who have a delayed menopause, suggesting that estrogen may play a protective role. Studies differ on whether or not hormone replacement therapy delays cataract development; whether such therapy includes estrogen alone or estrogen plus progestin may also have an effect.

Glaucoma

Glaucoma is more predominant with age and in women. It is believed that declining levels of estrogen during menopause may render the optic nerve more vulnerable to glaucomatous damage. Although more studies are needed to fully understand the role of sex hormones in glaucoma, estrogen has been associated with increased ocular blood flow and decreased IOP, providing neuroprotective properties to the optic nerve. Hormone replacement therapy containing estrogen appears to decrease the risk for primary open-angle glaucoma; however, further studies are needed to weigh the benefits against the risks associated with long-term use, such as breast cancer.

SYSTEMIC DISEASES

Sjögren Syndrome

Sjögren syndrome (SS) is a systemic autoimmune disorder that affects women far more than men. As the clinical presentation of SS can be extremely variable and nonspecific (dryness, swollen glands, upset stomach, joint pain, brain fog, headaches, mouth sores, etc.), this has contributed to delayed diagnosis. In an attempt to shorten the time frame of clinical presentation to diagnosis, clinical guidelines have been developed to bring awareness to health care providers on the multisystemic presentation of SS.

Eye care professionals should always consider SS in their differential when a woman presents with symptoms of DED. Additional questions concerning dry mouth (xerostomia), oral health (candidiasis of the tongue, cavities), and excessive fatigue should prompt further testing. Schirmer testing and ocular surface staining (both corneal and conjunctival; Figure) remain key ocular signs of SS, according to the American-European Consensus Criteria and the American College of Rheumatology.

Thyroid Disorders

Disorders of the thyroid, including hyperthyroidism, hypothyroidism, goiter, Graves disease, and Hashimoto...
“GRAVES OPHTHALMOPATHY AFFECTS WOMEN FIVE TIMES MORE THAN MEN, AND ITS ASSOCIATED SYMPTOMS ... ARE COMMON REASONS FOR SEEKING TREATMENT.”

Diabetes

Diabetes is a worldwide public health concern, with estimates of 422 million people affected. The prevalence of diabetes increases with age, with those older than 65 years at greatest risk. Other risk factors include family history, cardiovascular disease, obesity (BMI > 25), sedentary lifestyles, smoking, origin, socioeconomic status, and level of education. Women with gestational diabetes have an increased risk of complications during pregnancy and delivery, and a 10-fold risk of developing diabetes later in life, necessitating rigorous monitoring after pregnancy. Ocular complications include diabetic retinopathy, the cause of 2.6% of global visual impairment.

Trachoma

Trachoma, an infection with Chlamydia trachomatis, is a leading cause of infectious blindness in the world. Although it is treatable with antibiotics and surgery, access to these therapies may not be available in developing countries, where women are at three times greater risk than men to be blinded by the infection. Children get infected at a young age due to inadequate facial hygiene and, because mothers are typically in closer contact with children, rates of reinfection are high for women, leading to inflammation, scarring, and eventual blindness if the condition is untreated. Global community education programs on facial cleanliness and massive distribution of antibiotics have curbed this problem in endemic countries worldwide.

Pregnancy

Pregnancy causes numerous changes to the body, most of which are physiologic. The visual system is affected during pregnancy, with tear film changes, corneal swelling, decreased corneal sensitivity, and myopic shifts. Key ocular issues affecting pregnant women include blurry vision, DED, and intolerance to contact lenses. Some changes during pregnancy are not physiologic and can lead to pathologic states, such as preeclampsia, a leading cause of maternal and fetal deaths globally. Ocular manifestations of preeclampsia, which can occur in 5% to 8% of women, can include light sensitivity, blurred vision, and temporary loss of vision. Although these may be transient at first, they can lead to more permanent damage, including retinal detachment and cortical and cerebral blindness. Preeclampsia can also affect the fetus, with premature birth and low birth weight, both of which can impact the future health of the child and place a considerable burden on the health care system.

Black women are more at risk for preeclampsia, with a relative risk of 2.4 compared to White women. Guidelines for screening during pregnancy (checking for high blood pressure and proteinuria), coupled with education for women on modifiable risk factors, can have a significant impact on reducing the incidence of preeclampsia. Education programs for expectant mothers regarding alcohol and drug consumption, smoking, diet, and even the influence of the residential environment, can all have a positive impact on pregnancy.

The More We Know

More translational population-based research is needed to understand sex disparities in the prevalence and management of ocular diseases. Clinical baseline metrics on women’s eye health is lacking, and existing information fails to portray the diversity of different populations and ethnic groups. There is a tremendous opportunity for eye care practitioners to establish a sex- and gender-based database for clinical research on disparities in eye health. Access to care remains a significant barrier in many parts of the world, complicated by health care structure.

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socioeconomics, level of education, and cultural and health-seeking behaviors. Optometry must collaborate with industry, nongovernmental organizations, government bodies, and researchers to identify unmet needs in eye health disparities and establish recommendations for programs on screening, education, prevention, and management of eye diseases. In the words of legendary optometrist and global eye care advocate Professor Brien A. Holden, OD, PhD, DSc, optometry must continue “to advocate for intervention so that everyone obtains an eye examination as regularly as they should.”64 These words resonate profoundly during 2020, the year of vision, not just for women, but for everyone. ■


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