The 9th Conference on Health Care of the Chinese in North America

Eye Diseases in Asians

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Abstract

The focus of this talk will center on two issues: The first will pertain to new insight into the leading causes of visual loss in Asians and how this compares to diseases in Caucasian patients. The second discussion Will involve new advances in technology in ophthalmic surgery that have changed the standard of care for all patients.

At present, the National Institute of Health has stated that Age-Related Macular Degeneration (ARMD) remains the leading cause of vision loss in North America. The majority of patients who lose vision from ARMD do so from the neovascular complications of the condition (i.e. dystrophic new blood vessels that grow into the retina and result in cicatricial changes to the neurosensory elements). Currently, although the mainstay for treatment is laser therapy this remains an unsatisfactory option with most patients continuing to lose vision after treatment. Research efforts have shifted more to identification of potential preventive measures of this disease. Recently epidemiologic research has identified differences in disease rates that are directly related to ethnicity (1). Our institution has recently reported a case controlled study that has demonstrated a LOWER incidence rate of macular degeneration in Asian populations (2). This study was carried out reviewing a series of 10,000 consecutive fluorescein angiograms (vascular studies of retinal perfusion) by our diagnostic photography department. The angiograms were divided by race and subsequently by diagnosis. Using an odds ratio analysis it was identified that Asians had a one-third risk of developing vision threatening complications of macular degeneration versus their Caucasian cohorts.

This study has generated considerable interest as it allows for the potential for "Hypothesis generation" in regards to an explanation for the decreased rate of disease. Both diet and sun exposure are thought to play a strong causative role in the development of AMD. In Asian patients there frequently exists a diet richer in leafy green vegetables as well as a cultural aversion to sun exposure. The darker pigmentation of the choroid in Asians is also a possible reason for the above mentioned findings (3). In previous studies on macular degeneration in African Americans, the rate of macular degeneration was felt to be 10-20 fold lower than in Caucasian counterparts (4). Further study in this nature vs. nurture debate is being pursued as longitudinal data from second generation Asian families become available.

Although the prevalence of AMD is lower for Asians, they do have other increased risk of retina pathology due to genetic differences. Many epidemiologic studies have confirmed that there is a higher prevalence of high myopia (>7 diopters) among individuals from Asian countries (5). It is well accepted that high myopia is associated with an increased risk

of rhematogenous retinal detachment (tears). A great analogy is to think of a normal eye as a 12' x 12' room with only a certain amount of wallpaper covering the room (equivalent to the retina). In a myopic eye, the eye (room) is much longer and therefore the retina (wall paper) must be stretched much thinner in order to compensate for the larger dimensions. Therefore, because the retina is much thinner, over one's lifetime there is a greater chance for atrophic holes or tears to form. If vitreous fluid within the eye is able to get through these tears, then a retinal detachment can occur. Therefore, Asian patients with high myopia should have routine annual eye exams, and a low threshold to be seen by an ophthalmologist if they complain to their primary care physician of new onset flashes or floaters. Also, with increasing interest in refractive surgery these days, any high myopic patients undergoing LASIK refractive surgery procedure should have a preoperative dilated fundus exam as well as postoperative exam if the patient is symptomatic.

A second ophthalmic disease in which there is a marked difference between the Caucasian versus the Asian population is that of glaucoma. In this condition both the mechanism and the incidence of the disease is different in the two groups. Glaucoma is a disease characterized by optic neuropathy often related to elevated intraocular pressure. Although the pathogenesis of glaucoma is quite complex and highly debated, an oversimplified explanation would be to think of the disease as a problem with elevated pressures are due to either overproduction of aqueous fluid within the eye or abnormal resistance to outflow. The visual manifestation of all glaucoma is progressive visual field loss. Whereas chronic open glaucoma (COAG) is more prevalent in the Caucasian group, the main type of glaucoma affecting the Asian population is the narrow angle glaucoma (NAG) variant. The reason for such a dichotomy is related to differences in anatomic relationship between the two groups. In Caucasians, the anteroposterior position between the lens/iris structures and the cornea is much greater. The trabecular meshwork (areas of aqueous fluid drainage) in patients with COAG are often "open" (not occluded by the iris). It is usually silent, such that patients are often not aware of the disease and often diagnosis is made as an incidental finding during routine eye exams. While Asians can also have COAG, most tend to have chronic angle glaucoma. Asians' eyes tend to be smaller (with the obvious exception of the high myopes mentioned above) and the anteroposterior depth or distance between the lens/iris structures and the cornea is shallower or shorter. This anatomic difference allows for the iris to potentially intermittently obstruct the trabecular meshwork and thereby physically obstructing egress of aqueous fluid. NAG can by asymptomatic like COAG, but often times there can be episodes of extreme pain or photophobia. Unlike COAG the areas of drainage in CNG can be blocked acutely, thereby resulting in a rapid rise in intraocular pressure. The incidence of CNG tends to also increase with age as the lens swells due to cataractous changes. Therefore, constant vigilance and screening for glaucoma is needed.

The last portion of this presentation will deal with new advances in refractive surgery and will be provided in video format.