An Evolving Epidemiological Landscape

An update on the diagnoses and interventions for glaucoma in China.

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Population-based surveys indicate that, globally, one out of 40 adults over 40 years of age suffers from glaucoma with visual function loss,[1] suggesting that around 60 million people worldwide may have been affected by glaucoma in 2010. One-third of these glaucoma patients are believed to be Chinese. In 2020, there will be 0.7 billion individuals over the age of 40 in China, which suggests that the number of glaucoma patients will rise to 24 million by 2020.[2]

DISEASE PREVALENCE

Glaucoma can be classified into two types: open-angle glaucoma (OAG) and angle-closure glaucoma (ACG). A higher prevalence of ACG among Chinese compared with other races has been documented,[3,4] and OAG is more common in whites and people of African descent.[5] Recent studies have shown that the type and prevalence of glaucoma in China is changing.[6] Compared with data collected before 2000, the overall incidence of OAG has increased fivefold, while that of ACG remains the same.[7] Currently, the prevalence of ACG and OAG in adults over 40 years old living in urban regions was 1.5% and 2.1%, respectively,[8] and the prevalence of ACG and OAG in rural districts was 0.5% and 1.2%, respectively.[9,10] Among the Chinese glaucoma patients, more than 85% of OAG patients in both urban and rural areas had an IOP of 21 mm Hg or less, which is classified as normal-tension glaucoma.[8,10]

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Diagnosis

Clinically, both OAG and ACG produce similar changes in the optic disc and visual field. In ACG, patients experience an acute attack of sudden IOP elevation with pain and blurred vision, which is now recognized as acute primary angle-closure (APAC). In patients with OAG, the clinical appearance is often bilateral but asymmetric with a slow progression. High IOP, however, used to be considered a common feature of ACG. The higher the patient's IOP, the greater the likelihood of him or her developing OAG that progresses rapidly. Emerging evidence suggests that more than 75% of Chinese patients with ACG did not have an acute attack; instead, most of them have an asymptomatic progression similar to OAG.[11] Moreover, IOP is no longer recognized as a defining criterion for OAG.[7] In fact, most of the OAG patients in the Chinese population have normal-tension glaucoma and do not have an elevated IOP. Parameters such as the thickness of the retinal nerve fiber layer and progression of defects

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in the visual field, therefore, should be used more often for diagnosing and monitoring OAG in Chinese patients. Half of the people affected by glaucoma in developed countries remain undiagnosed, with nine out of 10 ACG and OAG patients undiagnosed worldwide.[1] The undiagnosed rate in developing countries is even higher.[12] It is estimated that there are over 10 million undiagnosed glaucoma cases in rural China.

Intervention

The management of APAC will have an important role to play with regard to the high prevalence of ACG in the Chinese population. Although not all ACG patients have a history of an acute attack, APAC can result in severe damage and visual loss. There are two key challenges associated with managing APAC: normalizing the IOP as quickly as possible and preventing the formation of chronic angle-closure glaucoma (CACG). The use of topical and systemic IOP-lowering medications has been the conventional treatment for an acute angle-closure attack. As soon as the IOP is controlled and sufficient, corneal clarity is reestablished, and laser iridotomy is performed to prevent recurrence of APAC as well as progression to CACG. In the past decade, immediate argon laser peripheral iridoplasty or immediate anterior chamber paracentesis have been shown to be effective and safe alternative interventions to abort an acute attack of APAC.[13] Up to 60% of APAC cases in Asian eyes progress to CACG despite a successful laser iridotomy. Earlier cataract removal has been shown to be effective in preventing CACG progression.[14] We recommend surgeons have a low threshold to perform early phacoemulsification after an attack of APAC.

FUTURE TREND

It is foreseeable that both ACG and OAG will substantially increase in the coming decade in China as a result of urbanization and the aging of the population. Early detection and treatment is the key to reduce the number of blind people suffering from glaucoma. Strategies to improve early detection are highly desired, especially in rural areas of China. ■

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