

SHORT COMMUNICATION

Incidence of nonarteritic anterior ischemic optic neuropathy in adult Chinese: The Beijing Eye Study

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PURPOSE. *To determine the incidence of optic nerve damage due to nonarteritic anterior ischemic optic neuropathy (NAION) in the adult Chinese population.*

METHODS. *The Beijing Eye Study, a population-based, longitudinal study which included 4439 subjects (age 40+ years) in 2001, was repeated in 2006. In the follow-up examination, 3169 (71.4%) subjects participated. Optic disc photographs were assessed. Diagnostic criteria for incident NAION were a small optic disc, segmental pallor, and loss of retinal nerve fiber layer and visual field in the follow-up examination, with a normal optic nerve head appearance at baseline.*

RESULTS. *New NAION was found in one eye, with an incidence rate of $0.03 \pm 0.03\%$ per 5 years (mean \pm standard error) (95% confidence interval: $-0.03, 0.09$), or about 1:16,000 subjects per year.*

CONCLUSIONS. *Within a 5-year period, new NAION may develop in 1 out of 3200 adult Chinese, or 1:16,000 adult Chinese per year. (Eur J Ophthalmol 2007; 17: 459-60)*

KEY WORDS. *Nonarteritic anterior ischemic optic neuropathy, Visual field loss, Visual impairment, Low vision, Blindness, Small optic disc*

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INTRODUCTION

Nonarteritic anterior ischemic optic neuropathy (NAION) is an acute optic neuropathy occurring predominantly in small optic nerve heads in elderly patients (1-3). It has been debated which factors other than elderly age and a small optic disc size predispose to the disease. Data of its incidence in the general population have only scarcely been available so far (4, 5). We therefore aimed to evaluate the prevalence of optic nerve damage with the features of preceding NAION in the present population-based study.

METHODS

The Beijing Eye Study is a population-based cohort study in Northern China (6). The Medical Ethics Committee of the Beijing Tongren Hospital had approved the study protocol and all participants had given informed consent. Out of 5324 individuals aged 40 years or older residing in the study area, 4439 individuals (2505 women) participated in the eye examination (response rate: 83.4%) in 2001 as described in detail previously (6). In 2006, the same population was invited for a re-examination, with 3253 subjects (6506 eyes) participating (response rate: 73.3%).

Diagnostic criteria for incident NAION were a small optic disc with a cup/disc diameter ratio of 0.3 or less, segmental pallor, segmental loss of retinal nerve fiber layer, and segmental visual field loss in the follow-up examination, with a normal optic nerve head appearance at baseline of the study in 2001.

RESULTS

Out of the 6506 eyes, one eye fulfilled the definition of a new NAION, with an incidence rate of $0.03 \pm 0.03\%$ per 5 years (mean \pm standard error) (95% confidence interval: -0.03 , 0.09) or about 1:3200 subjects per 5 years, or 1:16,000 subjects aged 40+ years per year. Age of the man with incident NAION was 47 years, vision was 1.0, and visual field showed defects in frequency doubling perimetry in the inferior hemisphere. The optic disc with a size of 1.94 mm^2 did not have cupping and exhibited a pale neuroretinal rim in its superior half. The visibility of the retinal nerve fiber layer was markedly reduced in the temporal superior region, corresponding to a reduced diameter of the temporal superior artery. In 2004, arterial hypertension was diagnosed with blood pressure measurements of 140/100 mmHg. The patient smoked about 10 cigarettes a day, drank little alcohol, and had no detected diabetes mellitus. In his right eye, the patient showed a cellophane maculopathy, with his vision remaining at 1.2 and a normal visual field. Intraocular pressure was 16 mmHg.

DISCUSSION

The annual incidence rate of 1 out of about 16,000 Chinese with an age of 40+ years may be at the lower end of the incidence range reported and calculated from previous studies on Caucasian populations in which about 2.3 to 10.3 patients per 100,000 inhabitants older than 50 years were affected with NAION in the United States per year (4, 5). Despite its marked statistical limitation due to the low incidence rate of NAION, the present study may, therefore, support the finding from previous investigations that whites may be affected by NAION more commonly than population groups of another ethnic background such as Chinese (4, 5). One may consider that the interethnic differences in optic disc size, with the smallest optic discs found in Caucasians, medium sized optic

discs in Asians, and largest discs in Afro Americans, may be responsible for the interethnic differences in the frequency of NAION, which occurs predominantly in small optic nerve heads (7). The major limitation of the present study is the low incidence rate of NAION so that the incidence rate for NAION as calculated in the present investigation may have to be confirmed in larger population-based studies with more than 10,000 subjects included. One may conclude that NAION-associated optic nerve damage develops in 1 out of about 16,000 adult Chinese per year. Calculated for the whole population aged 40+ years in China, the figure will be about 30,000 patients with new NAION per year in China.

Proprietary interest: none.

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