

Optic Neuritis in Southeast Asia: a Different Pattern of Disease

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This review evaluates a number of recent studies on optic neuritis carried out in Singapore. In Singapore, and probably throughout Asia, the disease is more likely to be of the anterior variety with optic disc swelling, and is sometimes associated with an underlying infective process such as syphilis or tuberculosis, or is of an autoimmune aetiology. Most cases of optic neuritis seen in Singapore are idiopathic; multiple sclerosis is rarely seen in the region, but is likely to be found only in patients with retrobulbar optic neuritis. The 4-year risk for patients in Singapore developing multiple sclerosis is only 9.1% compared with the higher figures reported from the seminal Optic Neuritis Treatment Trial. The usefulness of magnetic resonance imaging in the management of optic neuritis in Singapore is reported.

Key words: Magnetic resonance imaging, Multiple sclerosis, Optic neuritis, Syphilis, Tuberculosis

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Introduction

On being presented with local patients with optic neuritis (ON) during the past 10 years at the Singapore National Eye Centre (SNEC) and elsewhere in the region, it was apparent to this European ophthalmologist that the pattern of the condition was different in Asia from that encountered in the Western world. This paper discusses the findings from formal surveys carried out in Singapore, and from personal experience.

Asian Pattern of Optic Neuritis

In 2001, we published the results of a small retrospective study involving 31 patients aged 11 to 67 years, 22 of whom were Chinese, who presented to the Singapore clinics with ON.¹ Seventeen patients (55%) had anterior ON with disc swelling, only 2 patients had multiple sclerosis (MS), and syphilis was an important infective aetiology in 1 patient. Twenty six patients (84%) had idiopathic disease, 5 of which were bilateral. This study encouraged us to attempt a prospective evaluation of all neuro-ophthalmological cases, including ON, treated by us in Singapore over a 2-year period from 2002 to 2004.

In 2009, we reported the overall results of our survey of 1356 patients, of whom 627 were new cases, attending the public hospital's neuro-ophthalmological clinics.² We found that the

commoner optic neuropathies were non-arteritic anterior ischaemic optic neuropathy in the older age group and ON in the younger age group. The overall incidence of ON was 0.83 per 100,000 population.

A more detailed study of the patients with ON from the above survey was published in 2008, wherein the findings for 55 patients, of whom 72% were Chinese, were reported.³ The age range was 12 to 70 years with a peak in the 31 to 40 years age group. Again, anterior ON with optic disc swelling (Figure 1) was the most common presentation, occurring in 33 of 55 patients (60%) and, of these, 49.1% were idiopathic. Furthermore, MS, being rare among Asians, was only found in 3 of these 33 patients (9%) as opposed to a higher incidence (50%) in the patients with retrobulbar ON.

Figure 1. Swollen hyperaemic optic disc seen in a patient with anterior optic neuritis (papillitis).



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Two patients had the opticospinal form of the condition commonly encountered in Singapore. The 4-year probability of development of MS was only 9.1%, thus it appears that ON in Asians can have a proven aetiology other than MS in more than 20% of patients.

Infective or autoimmune ON was discovered in 5 of the 33 patients with anterior ON, 1 of whom had syphilis, and there were no such aetiologies found in the patients with retrobulbar ON. The Singapore ON recurrence rate is also lower than that reported elsewhere, and recurrence is indicative of an underlying disease process.

A recent report from Singapore⁴ on magnetic resonance imaging (MRI) studies of the brain and optic nerves performed within 6 weeks of acute presentation (range, 7 to 45 days) in 15 of the previously mentioned 55 patients (aged 13 to 53 years) presenting with acute ON demonstrated a lower rate of abnormalities in these individuals than in those reported in Western patients, and the lesion-load and grades in Singaporeans were lower in the patients with anterior ON. Thus, the authors concluded that in Singaporean patients with more commonly occurring anterior ON who are unlikely to have MS, the value of the currently available MRI investigation is of limited significant clinical benefit.⁴

Discussion

In any discussion on ON, it is essential that the difference between the 2 varieties of the condition, namely anterior ON previously termed papillitis (Figure 1) and the retrobulbar variety, is clarified, and this is of particular relevance in studies of a non-Caucasian population. In anterior ON, the optic disc is swollen at the outset, whereas in retrobulbar ON, it remains normal for about 6 weeks before becoming pale.

In Walsh and Hoyt's classic textbook, it is stated that "about 20-40% of patients with acute optic neuritis have some degree of disc swelling",⁵ but in our studies, disc swelling was present in 60%.¹⁻³ An infective cause must be excluded in such patients, especially syphilis and tuberculosis, both of which are of increasing prevalence in Asia. MS is a rare condition in this region and is unlikely to be the underlying aetiology in patients with anterior optic neuritis. In fact, our patients' 4-year risk of developing MS is only 9.1% overall, compared with the figures reported from the Optic Neuritis Treatment Trial (ONTT) where the 5-year risk was 30%⁶ and the 10-year risk was 38%.⁷ However, 85% of the patients in

the ONTT were Caucasians. The findings from Singapore are in agreement with studies reported from Japan⁸ and Taiwan.⁹

It must also be pointed out that, particularly with retrobulbar ON, a compressive cause must be considered when the condition is atypical and/or not responding to treatment. In these circumstance, neuroimaging of the pituitary area and the anterior visual pathway are essential to exclude a compressive lesion (the less expensive computed tomography scan will often suffice as many Asian patients cannot afford MRI).

Conclusions

ON in Southeast Asian patients (and indeed in all patients) should be clearly defined as being of the anterior or retrobulbar variety, the former being the commoner in this region and probably throughout Asia. An infective or autoimmune cause must be excluded, especially tuberculosis and syphilis. MS is a rare cause of ON in Asians, and is only likely in retrobulbar ON. MRI is of limited clinical value for the majority of our patients and may be reserved for patients with retrobulbar ON.

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