Bilateral optic neuritis as the presenting symptom of multiple sclerosis

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Abstract

Background: Optic neuritis (ON) is one of the earliest manifestations of multiple sclerosis (MS). The prevalence of bilateral ON (BON) as the presenting symptom is not clear. The aim of this study was to evaluate the prevalence of BON as the presenting symptom in MS and compare it with unilateral ON (UON). Subjects and Methods: In this study, two groups of definite MS patients according to the McDonald's criteria were enrolled: Thirty patients with BON and fifty persons with UON (selected randomly from all of the UON patients) as the presenting manifestation. The patients' data were collected from the Isfahan MS Society Registry. The SPSS 22 software was used for analysis of the data. P < 0.05 considered as significant. Results: Thirty of 3972 MS patients presented with BON. The mean of their ages was 26.00 ± 6.29 in BON and 30.10 ± 8.25 in UON group (P = 0.015). Twenty-five of BON patients were females, and five were males and in the UON group, 42 were females, and eight were males. Expanded disability status scale was 1.83 ± 1.17 in BON and 1.84 ± 1.25 in UON group (P = 0.975). The severities of relative afferent pupillary defect (RAPD) (in pluses) were 2.00 \pm 0.52 and 1.43 \pm 0.72 in two groups, respectively. Conclusions: The prevalence of BON as the presenting symptom was about 0.7%. The patients who presented with BON were younger at the time of diagnosis when they were compared with those who diagnosed with UON and also had a more severe RAPD. BON could be considered as one of the important presenting manifestations of MS.

Key words: Multiple sclerosis, optic neuritis, presentation, visual deficit

INTRODUCTION

Multiple sclerosis (MS) is an inflammatory disorder of central nervous system which usually affects people aged 20–40.^[1] Optic neuritis (ON) is one of the earliest manifestations of this disease.

It results in subacute decrease of vision in a period; however, in 90% of patients it recovers with no intervention.^[2]

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ON might be accompanied by periocular pain, impaired color vision, and relative afferent pupillary defect (RAPD).^[3,4] ON can be unilateral or bilateral. Bilateral ON (BON) has two types: True BON considered when both eyes of the patient affected at or almost at the same time and sequential BON considered when both eyes affected in different times.^[5]

Unilateral ON (UON) was found to be the presenting symptom in about 20% of the European and 47.5% of the Isfahanian (one of the largest provinces of Iran) MS patients. However, the prevalence of BON is not clear although it thought to be common in MS.^[6,7]

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Few researches have been done regarding to BON among MS patients. Hence, in this study, we evaluated this symptom in MS patients.

SUBJECTS AND METHODS

This is a retrospective study in which two groups of definite MS patients according to the McDonald's criteria were enrolled:^[8] Patients with BON and those with UON as the presenting manifestation. The patients' data were collected from the Isfahan Multiple Sclerosis Society (IMSS) Registry. IMSS is a registry of MS patients since 2003 and all of the neurologists in Isfahan province refer the MS patients to this society for obtaining clinical supports. Three thousand nine hundred and seventy-two patients were registered in the society and among them, thirty MS patients with BON, and fifty patients with UON as the presenting symptom were recruited as the case and control groups, respectively. However, those who had migrated out of the province, could not be followed or had passed away were not included. Twelve BON cases with neuromyelitis optica and five BON cases with acute disseminated encephalomyelitis have been excluded.

The demographic data which registered included names, gender and age obtained from IMSS. Data gathered from IMSS clinical records included: Demographic data, history of viral diseases, RAPD, expanded disability status scale (EDSS), the presence of oligoclonal bands (OCB) in both groups.

Furthermore, type of ON (simultaneous or sequential), visual cortex involvement in magnetic resonance imaging (MRI), and visual recovery (whether partial or complete) data were collected for BON group.

SPSS 22 software for Windows (IBM, New York, US) was used for analysis of the data. Paired *t*-test and Chi-square tests were used for analyzing the quantitative and qualitative data. P < 0.05 considered as significant.

This study is reviewed and approved by the Institutional Ethics Committee of Isfahan University of Medical Sciences. Informed consent was obtained from all patients at the time of the first visit.

RESULTS

Thirty of 3972 MS patients presented with BON, so its prevalence as the presenting symptom was 0.7%. The mean of their ages was 26.00 \pm 6.29 in BON and 30.10 \pm 8.25 in UON group (P = 0.015). Twenty-five of BON patients were females, and 5 were males and in the UON group

42 were females, and 8 were males. EDSS was 1.83 ± 1.17 in BON and 1.84 ± 1.25 in UON group (P = 0.975). The severities of RAPD (in pluses) were 2.00 ± 0.52 and 1.43 ± 0.72 in two groups, respectively.

Among BON patients, 24 of them suffered from simultaneous and 6 from sequential type. The mean time of BON was 6.20 ± 1.32 weeks. The visual function recovered completely in twenty patients and partially in 10 persons. Visual cortex damage was seen in MRI of 27 BON patients.

The patients' disease data are shown in Table 1.

DISCUSSION

ON is known as one of the most common presenting symptoms of MS. According to the previous studies, its frequency as the first symptom was reported to be about 21% and about 5.5% of the patients diagnosed with sequential type.^[5]

In this study, we found that the frequency of BON as the presenting symptom was about 0.7% and in some studies, its frequency reported about 0.42% and both of them shown that it was a rare presenting symptom for MS.

The patients who presented with BON were younger at the time of diagnosis when they were compared with those who diagnosed with UON and also had a more severe RAPD. This may show the most severe nature of BON in comparison to UON.

The status of OCB was available for all of the BON patients and 39 of the UON persons. OCB was positive in 60% and 67% (among patients with available OCB) of patients, respectively. In some studies, its positive frequency was about 63%.^[5]

Furthermore, in this study, the results showed that about 30% of patients with BON had a history of viral disorders, but only 6% of the UON group had this history, and surprisingly, this difference was significant. This finding could promote some newer studies in regard to the effects of viral infections in the pathogenesis of MS and especially ON.

It could be discussed in two ways. Some previous studies reported the relation between MS and some kinds of viral

Table 1: The patients' disease data

| | BON group | UON group | Р |
|-----------------------------|-----------|-----------|-------|
| Oligoclonal band (+) | 18/12 | 27/12 | - |
| History of viral disease(+) | 9/21 | 3/47 | 0.007 |
| RAPD (+) | 2.00±0.52 | 1.43±0.72 | 0.000 |
| | | | |

BON: Bilateral ON, UNO: Unilateral ON

diseases and on the other hand, it was shown that some types of infections such as Lyme disease, toxoplasmosis, tuberculosis, syphilis, cat scratch disease, or viral disorders (e.g., herpes, hepatitis A virus, or enteroviruses) could origin optic neuropathy which presented with visual loss and optic disc swelling in the funduscopic examination. ^[2] Furthermore, these infections may cause macular star, especially in children. Hence, we should distinguish this type of optic neuropathies from those which are directly originated from MS, and in most cases, a precise history and clinical examination could help in this differentiation.

CONCLUSION

The prevalence of BON as the presenting symptom was about 0.7%. The patients who presented with BON were younger at the time of diagnosis when they were compared with those who diagnosed with UON and also had a more severe RAPD. BON could be considered as one of the important presenting manifestations of MS.

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Conflicts of interest

There are no conflicts of interest.

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