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Multiple sclerosis in a series of Sri Lankan patients – Clinical and radiological characteristics

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Abstract

Background and Objectives: Studies on Multiple Sclerosis (MS) in Asian populations reveal that the clinical and profile of MS is different from the classical prototypic MS described in the West. This study aimed to identify the epidemiology, presentations and radiological features and MS patients in Sri Lanka.
Methods: This was a retrospective cross sectional study in patients presenting with MS to the Institute of Neurology, National Hospital of Sri Lanka from January 2007 to October 2011. The diagnosis of MS was based on the 2010 revised McDonald's criteria. Patients with NMO spectrum disorder is excluded in the study. *Results:* The study population consisted of 27 patients. Of these 17 were females (63%). The mean age at first presentation was 33.8 years. Presentations were cerebral motor deficits (20), optic neuritis (15), cerebellar syndrome (14), cerebral sensory deficits (11), transverse myelitis (9), and brainstem syndromes (8). Relapsing and remitting was the commonest pattern of disease (16/27). MRI analysis revealed significant periventricular (33.78%) and juxtacortical (29.72%) involvement.
Conclusion: When NMO spectrum disorder is excluded**, t**he clinical and radiological manifestations of MS in this study population in Sri Lanka share many features similar to the prototypic MS seen in the West.

INTRODUCTION

Multiple sclerosis (MS) is an immune mediated inflammatory disease which leads to neuronal demyelination in the central nervous system with lesions disseminated in time and space. The median estimated prevalence of MS worldwide is around 30/100,000 population.[1] However MS is a relatively uncommon disease in Asian countries.[2] There is paucity of data available for Sri Lanka which is regarded to have a low prevalence for the disease.[2]

Studies on MS in Asian populations reveal that the clinical profile of MS is different from the classical prototypic MS described in Western countries. Apart from the low prevalence of MS in Asian countries, there is higher female to male ratio and lower familial occurrence. Furthermore there is higher proportion of spinal cord and optic nerve involvement with these lesions being more severe.[3] This has led to the emergence of the intensely debated optico-spinal variant of MS (OSMS). Asian patients also tend to have a lower frequency of brain and cerebellar lesions.[4] When considering the disease course the progressive form occurs in a lower frequency.[3] The radiological patterns of MS are also different in Asian patients when compared to the classical prototypic MS seen in the Western world. Asian patients have fewer lesions in the brain and cerebellum but the spinal cord lesions tend to be longer and more severe.[4] The MRI findings are also less likely to fulfill the McDonalds criteria on dissemination in space.[4]

The nature of MS in Sri Lanka remains largely unstudied. There is paucity of data available at present on the prevalence, epidemiology, presenting features and prognosis of MS in Sri Lankan patients. This descriptive study aims to identify the demography, clinical presentation and radiological features of MS patients in Sri Lanka. This will help to characterize the nature of MS in Sri Lanka and relate it to findings observed in other Asian countries.

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METHODS

The study was carried out as a retrospective descriptive study in patients diagnosed with MS presenting to the Institute of Neurology at the National Hospital of Sri Lanka. This is the largest tertiary care referral center for patients with neurological disorders in Sri Lanka. Readily accessible MRI facilities which are scarce at other centers makes the Institute of Neurology the final referral point for the diagnosis of patients with MS from most parts of the country.

Patient records were retrospectively analyzed. The study included patient records from January 2007 to October 2011. The diagnosis of MS was made according to the 2010 revised McDonald's criteria.[5] Patients who had positive vascular risk factors (such as coronary heart disease and hyperlipidaemia) or who had combined clinical and serological evidence of underlying collagen vascular disorder were excluded from the study as these patients were potential MS mimics. Patients with a diagnosis of NMO spectrum disorder were also excluded.

Details regarding the demographic characteristics, clinical features and other investigations including CSF analysis and visual evoked potentials were collected using a questionnaire from the clinical records of the patient. The clinical presentations were categorized in to 6 components. These were as follows: optic neuritis, cerebral motor deficits, cerebral sensory deficits, cerebellar, brainstem and spinal cord. The above categories were defined as follows:

Optic neuritis: Presence of either clinical evidence of papillitis/ optic atrophy accompanied by positive visual evoked potential (VEP) studies or positive VEP studies alone (subclinical)
Cerebral motor deficits: Motor deficits localizing to brain
Cerebral sensory: Sensory defects localizing to the cortex/ thalamus
Brainstem: Cranial nerve dysfunction except ON localizing to the brainstem
Cerebellar: Clinical features compatible with cerebellar syndrome
Spinal cord: Paraplegia, quadriplegia or Brown-Sequard syndrome with sensory level, with or without sphincter involvement.

All patients underwent MRI of brain and whole spine with contrast. Radiological analysis was performed using the MRI scans of the study population by a Consultant Radiologist. After tabulation of the MRI findings, further analysis of the MRI findings of patients were made in accordance with both the 2005 and 2010 McDonald's MRI criteria to look for compatibility.

Statistical analysis was done using SPSS version 17.

RESULTS

The study population consisted of 27 patients. Of these 17 (63%) of patients were female. The mean age at first presentation was 33.8 years. None of the patients in the series had a positive family history for MS.

The categories of initial clinical presentations observed are listed in Table 1. As shown the commonest manifestations were cerebral motor deficits and optic neuritis. The frequency of transverse myelitis was less common in comparison. Of the study population 16/27 patients were of the relapsing remitting subtype, 5/27 patients was of the primary progressive subtype, 3/27 was of the secondary progressive subtype, 1/27 had clinically isolated syndromes. The remaining 2 patients could not be classified into a subtype.

The MRI findings of the patients in our case series based on the region of demyelination are listed in Table 2. As shown, there were a high proportion of patients with demyelinating plaques in the brain and cerebellum with a cumulative percentage of 85.1%. Table 3 shows the

Table 1: Initial clinical presentations of the multiple sclerosis patients (N=27)

Presentation	Frequency
Cerebral motor deficits	20
Optic Neuritis	15
Cerebellar	14
Cerebral sensory deficits	11
Transverse myelitis	9
Brainstem syndromes	8

Table 2: MRI findings of the multiple sclerosis patients (N=27)

Region	Lesion burden	Percent
Periventricular	25	33.8
Juxtacortical	22	29.7
Infratentorial	16	21.6
Spinal	11	14.9
Longitudinal extensive transverse myelitis	3	4.1

compatibility with the 2005 and 2010 McDonald's MRI criteria for definite MS, in dissemination in space and dissemination in time.

DISCUSSION

This study reports the largest published series of patients with MS from Sri Lanka. The age and gender distribution observed in our series is consistent with observations made in other studies performed in Asian populations with MS. The lack of positive family history, and the less frequent occurrence of progressive form of MS were also in keeping with the observations from the other regions in Asia.[2]

The clinical presentations of MS observed in our study showed a predominance of cortical motor manifestations and optic neuritis. The spinal cord involvement by comparison was less common. This clinical pattern is similar to that observed in the West. The initial case reports on MS in a Sri Lankan population also alluded to this clinical feature.[6] Furthermore the common occurrence of OSMS is mainly reported in Eastern Asian countries with studies from India showing a lower prevalence.[7,8]

The MRI findings of our patients are compatible to the above observed clinical pattern. Our patients had a predominance of periventricular and juxtacortical demyelination. In other Asian populations, the brain lesions tend to be less in number, lesions in the cerebellum are rare, with longer and more severe spinal lesions.[4] However in our series the MRI findings reflect the clinical picture showing an abundance of brain and cerebellar lesions with a low incidence of spinal cord lesions.

It is evident from the above characteristics that after exclusion of NMO spectrum disorders, our MS patients share many features similar to the prototypic MS patients in the West. Direct comparison with other Asian studies may be inappropriate, as many of the Asian studies often use the older criteria which include the NMO spectrum disorders.

A genetic background for the phenotype in MS has been previously investigated by Yamasaki *et al*[9] where it was found that the DR2-associated DRBI1501 allele and DRB50101 allele were associated with Western-type MS among the Japanese patients. Yamasaki *et al*[9] also reported a changing trend in the clinical presentation of MS in Japan with the conventional type becoming more common over time. The genetic makeup of the Sri Lankan MS patients need to be explored to explain the difference in clinical presentation from other Asian studies.

Previous studies have shown a low sensitivity of the McDonalds criteria for identifying dissemination in space in the Asian MS patients.[4] These studies have been performed using the 2005 criteria. When comparing the sensitivity of the McDonald's criteria for detecting dissemination in space in our patients, there was an improvement when using the 2010 criteria. However our study is limited by the small sample size. Further larger scale studies are required to assess the sensitivity and specificity of the 2010 McDonald's criteria in an Asian population.

Table 3: Compatibility of the study patients with the 2005 and 2010 McDonald's MRI criteria for definite multiple sclerosis

	2005 criteria	2010 criteria
Dissemination in space	9/14	12/14
Dissemination in time	14/14	14/14

In conclusion, *w*hen NMO spectrum disorder is excluded**,** the clinical and radiological manifestations of MS in Sri Lanka share many features similar to the MS seen in the West.

DISCLOSURE

Conflicts of Interest: None

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