

## Demographic and clinical profile of Multiple Sclerosis in Kashmir: A short report



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### ABSTRACT

**Background:** Multiple sclerosis (MS) is a chronic autoimmune and inflammatory disease of the central nervous system (CNS). There have been only few population/hospital based studies on MS in India, and at the same time there is no data on its profile in Kashmir.

**Methods:** A total of 41 MS patients diagnosed on the basis of 2010 Revised Mc Donald criteria were enrolled in this study from Kashmir region of India. Clinical, demographic, radiological and biochemical parameters were analyzed for most of the patients.

**Results:** Male to female ratio was found to be 1:3.1 with mean age at the time of analysis  $32.26 \pm 7.54$  (range 18–48) years. The mean disease duration was found to be  $3.2 \pm 3.6$  years. The most common course was relapsing-remitting (RR) present in 87.80% of cases followed by secondary progressive (SP) in 9.76% and primary progressive (PP) in 2.44%. Numbness, weakness of limbs, prickling and tingling sensations, muscle stiffness, and visual disturbances were most common manifestations. Condition of bilateral internuclear ophthalmoplegia (INO) and vertigo was rarely observed. Oligoclonal bands (OCB) were present in cerebrospinal fluid (CSF) of majority of the patients. Symptomatic and steroidal treatment mode was given to majority of the patients (92.68%) and only 7.32% patients were given disease modifying drug.

**Conclusion:** This is the first preliminary report on MS profile in Kashmir. The high prevalence of female patients and RR course of MS, low prevalence of progressive cases, predominance of OCB positive cases, insignificant family history in all cases, predominance of cases with low socio-economic status, and high rate of less educated and unemployed cases are the most important findings. By and large MS pattern in Kashmir was found to be relatively similar to West and rest of the Asia. Larger comprehensive studies are mandatory to completely understand MS pattern in Kashmir. There is utmost requirement to maintain a local MS registry in Kashmir so as to get an idea about the actual number of persons suffering from the disease and compare the data with other regions of India.

### 1. Introduction

Multiple sclerosis (MS) is a chronic autoimmune, inflammatory, and demyelinating disease of the central nervous system (CNS) mediated by an inappropriate immune response within the body against the insulating myelin sheath. Its prevalence shows variance across the globe, however, it is well known that MS is highly prevalent

in European populations (Compston and Coles, 2008). Despite few studies on MS in some parts of India (Bhatia et al., 1996; Pandit et al., 1993; Singhal and Wadia, 1975), there has been no report on its profile and prevalence from Kashmir region. Kashmir valley represents the northern most region of India, located in its North Western Himalayan belt. It is one of the divisions of Jammu & Kashmir State, having distinct temperate climate and comes under low-risk zone for MS

**Abbreviations:** CNS, central nervous system; CSF, cerebrospinal fluid; EDSS, expanded disability status scale; IEC, Institutional Ethics Committee; INO, internuclear ophthalmoplegia; IPD, In Patient Department; MRI, magnetic resonance imaging; MS, multiple sclerosis; MSIF, Multiple Sclerosis International Federation; NMOSD, neuromyelitis optica spectrum disorder; OCB, oligoclonal bands; OPD, Out Patient Department; PP, primary progressive; RR, relapsing–remitting; SD, standard deviation; SKIMS, Sher-I-Kashmir Institute of Medical Sciences; SP, secondary progressive; WHO, World Health Organization

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(Razdan et al., 1994), but recent studies (Bhatia et al., 2015; Pandit and Kundapur, 2014) from India have shown a rise in MS prevalence across different parts of India which is in consensus with 2013 Atlas of MS by the World Health Organization (WHO) and Multiple Sclerosis International Federation (MSIF) (<http://www.atlasofms.org>) (Atlas of MS, 2013). It is believed that there has been a substantial increase in MS admissions over the last decade in the hospitals across different parts of India and also in Kashmir region (Pandit and Kundapur, 2014; Syal et al., 1999; Zahoor et al., 2015), making it indispensable to analyze the clinical and demographic aspects of MS in Kashmir.

## 2. Material and methods

### 2.1. Participants

According to our neurologist (RA) there is insufficient data on the prevalence, pattern and epidemiology of MS in Kashmir region of India as reflected by the lack of MS registry (Zahoor et al., 2017), still during our period of study from 2011 to 2016; we recruited most of the MS admissions in our study. A total of 41 unrelated MS patients who were inhabitants of Kashmir were recruited for the present study from the In Patient Department (IPD) and Out Patient Department (OPD) of the Department of Neurology, Sher-I-Kashmir Institute of Medical Sciences (SKIMS), Kashmir, India. The study was approved by the local Institutional Ethics Committee of SKIMS (No. SKIMS 1 31/IEC-SKIMS/2013–6380). All patients/guardians were informed about the study and written consent was acquired from them prior to enrolment in accordance with the ethical standards laid down by the World Health Organization (WHO) and Declaration of Helsinki 1964 and its later amendments or comparable ethical standards.

Patients were recruited for this study after complete examination and diagnosis by the neurologist (RA). 2010 Revised McDonald criteria (Polman et al., 2011) were followed for MS diagnosis. Inclusion criteria for the selection of MS patients included clinico-radiological confirmed patients, while exclusion criteria included patients who did not satisfy McDonald diagnostic criteria, patients with a family history/previous history of other autoimmune diseases and patients who rebuffed from participating in this study.

### 2.2. Data collection

A pre-designed standardized questionnaire in form of a proforma was prepared for collecting patient history. Demographic, clinical, biochemical, and radiological details were recorded for the patients whose information was available, by reviewing medical file of each patient through consultation with the neurologist (RA). The data was collected by the research professional (IZ) only in order to maintain quality standards during the investigation. The collected data included i) age ii) gender, iii) religion, iv) region, v) socio-economic status, vi) employment status, vii) education, viii) disease duration, ix) signs and symptoms, x) disease course: relapsing–remitting (RR), secondary progressive (SP) and primary progressive (PP), xi) number of attacks, xii) family history of the disease, and, xiii) mode of treatment.

### 2.3. Data analysis

Data was statistically analyzed using GraphPad Software (<http://www.graphpad.com/scientific-software/prism>). The different demographic and clinical variables were expressed in numbers and percentages. Age at the time of analysis, disease duration, number of attacks, and, number of days in hospital were illustrated with mean and standard deviation (SD).

## 3. Results

The present study comprised of 41 MS patients from a subset of

**Table 1**  
Demographic and clinical features of study subjects.

Characteristics	MS
Total	41
Males (%)	10 (24.39)
Females (%)	31 (75.61)
Male/Female (%)	0.32 (32.25)
Age in years (Mean $\pm$ SD)	32.26 $\pm$ 7.54
Range of age in years	18–48
Disease course	
RR (%)	36 (87.80)
SP (%)	4 (9.76)
PP (%)	1 (2.44)

Values are shown as numbers with percent in parentheses or as mean  $\pm$  standard deviation (SD).

MS-multiple sclerosis, RR-relapsing-remitting, SP-secondary progressive, PP-primary progressive.

Indian dataset, covering the patients from Kashmiri population. Distribution of various demographic and clinical variables is shown in Table 1. All the subjects were Muslims having Kashmiri ethnicity. Our study did not detect patients from religious and ethnic minorities. Rate of participation for MS patients was 98%. Patients were in the age group of 18–48 years, except one female patient who was 14 years old at the time of analysis. In our study, there were 10 males and 31 females. The difference in gender distribution among patients is shown in Fig. 1. The MS patients comprised individuals from rural as well as urban areas, although majority were from rural areas with low socio-economic status (90.24%) and only 9.76% were from urban population with high socio-economic status. Generally our study subjects were found to be less educated (92.69%) and only few were holding employment (7.31%).

The mean disease duration was found to be 3.2  $\pm$  3.6 years. 38 (92.68%) patients were put on symptomatic and steroidal mode of treatment and only 3 (7.32%) patients were given disease modifying drug. The mean number of episodes/attacks was found to be 2  $\pm$  0.8. Most of the patients had RR (36, 87.80%) course of MS and only few had SP (4, 9.76%) and PP (1, 2.44%) (Table 1). The average number of days for hospital stay in most of the patients was 7  $\pm$  3.5 days. Expanded disability status scale (EDSS) score was available for only 1 patient with PPMS and it was found to be 6. The common presentations seen were predominantly sensory symptoms, spasticity and optic neuritis. Oligoclonal bands (OCB) were found in cerebrospinal fluid (CSF) of most of the patients. Magnetic resonance imaging (MRI) features included T2 hyperintense lesions in periventricular white matter and juxtacortical areas and for simplicity it has been

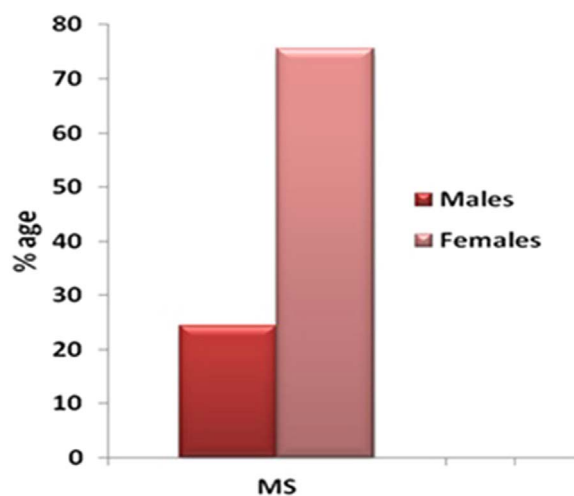


Fig. 1. Histogram showing the gender distribution in subjects.

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