DEMOGRAPHIC CHARACTERISTICS OF MULTIPLE SCLEROSIS IN JORDAN

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Abstract

Keywords *Multiple sclerosis, Demographic characteristics, Epidemiology.*

Background: To explore the essential demographic characteristics of Multiple Sclerosis in Jordan

Methodology: This is a retrospective cross-sectional study on demographic characteristics of Multiple Sclerosis patients in the neurology department in King Hussein Medical Centre. Data assembled through meeting surveys and inspection of medical records. Frequencies, percentages, means, and standard deviations were utilized for descriptive measurements. Differences between male and female investigated Differences at p<0.05 will be considered statistically significant.

Result: One hundred and five patients were investigated, 61.9% were females. The mean age of the patients at diagnosis was 30 years old. Disease duration ranged from 1-10. 75% of patients labeled as RRMS, where males had a more aggressive disease. Vitamin D deficiency was found in 60% of patients.

Conclusion: This study gave the baseline data of MS patients in Jordan and offered helpful bits of knowledge into differences in the characteristics of this disease across genders.

Introduction

Background

Multiple sclerosis (MS) is the commonest non-traumatic devastating illness to affect youthful adults. There are an expanding incidence and prevalence of MS in both developed and developing countries, the main cause for which stays dubious. MS is a complex disease; numerous genes unassumingly increment disease susceptibility notwithstanding a few well defined environmental components, specifically vitamin D or ultraviolet B light (UVB) exposure, Epstein–Barr infection (EBV)infection, obesity, and smoking [1].

The prevalence of MS in Jordan is assessed to be around 39/100,000 individuals that is practically identical to the commonness around the world. Numerous cultural aspects such as religious, financial, and social factors just as contrasts in medical services and social frameworks can be diverse among different cultures and countries [2].

The higher frequency of MS is seen in females who are influenced twice as often as men. Around, 2.5 million people are affected around the world, and youthful people aged between 20-and 40-years are mostly influenced [3].

Patients with MS may have a different clinical course. In many patients, the disease presents as the relapsing-remitting course (RRMS). It is the most common course, influencing 85% of patients. RRMS is set apart by discrete, day-to-week assaults, trailed by week to-month manifestation free span. RRMS can advance to secondary progressive multiple sclerosis (SPMS) that is described by an underlying relapse, trailed by continuous neurologic crumbling. Numerous patients can give primary progressive disease (PPMS) with a continuous decline from the beginning. In a few patients, the illness shows as a ceaseless decrease in function from the beginning and later by an acute attack defined as progressive relapsing multiple sclerosis (PRMS) [4].

Jordan is a medium-high risk country for MS, with a prevalence higher than what has been accounted for, potentially speaking to an expansion in incidence. Clinical and demographic properties are like most reports around the world [5].

Methodology

This retrospective cross-sectional descriptive study was performed in the Neurology department of the King Hussein Medical Center within The Royal Medical Services of Jordan which is a referral center; so we could observe patients from different areas in Jordan. The study was approved by our local Ethics Committee. Patients with MS attending the neurology department between June and September 2020 were enrolled. We included 105 patients who were diagnosed at least 12 months since their last visit. Information was collected using meeting surveys and inspection of medical records, which comprises of illustrative data about the patients and disease criteria. The meeting survey included ag, gender, and age at diagnosis, while the type of the disease course, duration of the disease, and vitamin D level at diagnosis were obtained from the medical records. All participants were given detailed information about the study before enrolment. Secrecy and privacy of data were guaranteed, and acceptance was obtained from all participants.

Data were analyzed using SPSS version 24. Descriptive statistics were used to illustrate the demographic and disease characteristics of the cases. For demographic and disease characteristics description, frequencies, percentages, means, SD, and ranges were calculated. To study differences between male and female patients, a one-sample T-test and chi-square tests were used.

Result

This study included 105 patients with MS. Female patients represented 61.9% of the patients, yielding a female-male ratio of 1.63:1. The mean age of the patients was 32.95 ± 10.5 years. Males' age ranged from 18-62 years with mean age 33.23 ± 9.46 while females' age range was 11-64 years with mean age 32.78 ± 11.17, and this difference was statically insignificant (p-value=0.1). The basic information of the patients is described in Table 1.

Table 1: Gender characteristics

Gender	Frequency	Percentage	Age range (year)	Mean age+SD
Male	40	38.1	18-62	33.23 ± 9.46
Female	65	61.9	11-64	32.78 ± 11.17
p-value				0.1

While the mean age at diagnosis was 30.1 ± 10.01, and the difference between recent mean age and the mean age at diagnosis was significant (p-value=0.00). The mean age for males at diagnosis was 30.30 ± 9.53, whilst the female one was 29.97 ± 10.36, and it was not significant with p-value=0.19. Most of the patients had a disease duration between 1-5 years. Disease duration ranged from 1-10 years, and the mean was 2.86 ± 1.48 years. Males' and female's disease duration mean was 2.93 ± 1.49, and 2.82 ± 1.49 respectively. P-value=0.65 between males and females mean disease duration that figures in Table 2.

Table 2: Gender versus age at diagnosis and disease duration

Gender	Age range (year)	Mean age+SD	Disease duration range (year)	Mean disease duration+SD
Male	12-60	30.30+9.53	1-8	2.93+1.49
Female	7-54	29.97+10.36	1-10	2.82+11.17
p-value	0.19		0.65	

Disease duration did not affect the male to female ratio; as the ratio between 0-5 years was 1.63, and between 6-10 years was 1.5, with likelihood ratio=0.008 and p-value=0.93. Three-quarters of the patients were of RRMS, and no patient with PPMS was reported. Male patients were more prone to develop SPMS than females with a likelihood ratio=5.51 and p-value=0.02 that shown in Table 3.

Tablet 3: Gender characteristics versus disease duration and disease pattern

	Gender	
Disease duration (year)	Male	Female
1-5	38	62
6-10	2	3
p-value	0.93	
likelihood	0.008	
Disease pattern		
SPMS	15	11
RRMS	25	54
P-value	0.02	
Likelihood	5.51	

Vitamin D deficiency and inadequacy formed 60% and 38% of patients at diagnosis. Neither males nor females were riskier for vitamin D deficiency or inadequacy as same as disease pattern see Table 4.

Tablet 4 Vitamin D versus Gender and disease pattern

	Vitamin D		
	Deficient	Inadequate	Adequate
Gender			
Males	25	12	3
Females	38	26	1
p-value	0.22		
Disease Pattern			
RRMS	14	10	2
SPMS	49	28	2
p-value	0.44		

Discussion

This study was conducted to describe the epidemiological data on MS originating from the Hashemite Kingdom of Jordan. In Jordan, there is an increase in the prevalence of MS, what is more, this pattern has been clarified by an increase in the prevalence of MS around the world [5,6]. Increasing awareness about vitamin D deficiency, early diagnosis using MRI, and disease-modifying agents; all these factors may lead to an increase in MS prevalence [7].

We have found that the mean age at onset 30 years and the male to female ratio is 1.63:1. These findings go with the regional and worldwide reports of the age of development of the disease and female preponderance [8,9].

The significant difference between age at diagnosis and age at conducting the study may refer to better outcomes due to earlier diagnosis and implementation of DMTs, lifestyle modification, and management of comorbidities [10]. The pattern of illness type in the current study, with most of the cases being of the RRMS type and absence of PPMS, resounds with that from different investigations [11]. Significant sex contrasts in progression and inflammatory activity of disease have been observed. Females experience more RRMS type, while men gather inability quicker, arrive at handicap achievements all the more quickly, and show more unfortunate recuperation after introductory malady relapse. Hormonal and additionally genetics are subsequently apparently associated with directing the course of the disease, and sex hormones, for example, estrogens, progesterone, prolactin, and androgens likely assume a part in these complex mechanisms. Unique hormone-related physiological conditions in ladies, for example, pubescence, pregnancy, puerperium, and menopause, fundamentally sway the recurrence and course of illness [12], and this explains the significant difference between males' course of disease and females' course of disease in our study.

Our study shows that 98% of patients suffering from either deficiency or inadequacy of vitamin D. Great efforts are being made in distinguishing hazard factors in MS and vitamin D is one of the guilty parties, where hypovitaminosis-D appears to contribute to disease activity and vitamin D supplementation researches have given some promise [13].

Limitaions
A common limitation to studies with such a retrospective cross-sectional design is the precision of the review and record of some other demographic features.

Conclusion
This study gave the baseline data of MS patients in Jordan and offered helpful bits of knowledge into differences in the characteristics of this disease across genders.

What is already known on this topic
- There is considerable variation in the prevalence of multiple sclerosis around the world.
- The prevalence of multiple sclerosis increases with latitude north and south of the equator.

What this study adds
- RRMS was the commonest pattern of MS among Jordanians.
- MS was strongly related to vitamin D deficiency among Jordanians.

Competing interests
The authors declare no competing interests.

Authors' contributions
Conceptualization: Mazen Abdallah Al Zo'ubi; Data analysis: Bushra Abedel elah Al Tarawneh; writing-original draft preparation: Mazen Abdallah Al Zo'ubi; writing-review and editing: Mazen Abdallah Al Zo'ubi; data collection: Majdi Mohamed Abu Awilda, Awni Ahmad Al Sheyab, and William Al-Sweear. All the authors have read and agreed to the final manuscript.

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