

ORIGINAL ARTICLE

The Prevalence of Familial Multiple Sclerosis (FMS) in Ardabil Province, Ardabil, Iran

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ABSTRACT

Introduction: Multiple sclerosis is one of the most common demyelinating diseases of the central nerves system. It runs in families. The aim of this study is to investigate the prevalence of familial multiple sclerosis in Ardabil province in Iran.

Methods: A cross-sectional study was performed on 611 patients of multiple sclerosis, who were registered in Ardabil MS registry system in Alavi hospital of Ardabil Province in Iran. The necessary data with the respect of positive family history of multiple sclerosis (MS), and other relevant information was collected and analyzed by statistical method in SPSS Version 19. The p- value of <0.05 was considered as significant value.

Results: In our study of 611 patients, female preponderance was noticed and the male to female ratio was 1: 2.57. In this study only 85 patients (14%) gave positive family history of MS. When compared to the available data, this positive family history of MS was low in Ardabil Province in Iran.

Conclusion: The incidence of positive family history of MS was low in Ardabil Province when compared to the incidence in other provinces of Iran.

Key words: Multiple Sclerosis, Familial MS, Ardabil Province, Iran.

Introduction

Multiple sclerosis (MS) is one of the most common demyelinating diseases of the central nerves system (1). This disease is classified to three groups such as Relapsing Remitting Multiple Sclerosis (RRMS), Secondary Progressive Multiple Sclerosis (SPMS), Primary

Progressive Multiple Sclerosis (PPMS) based on the onset and progression of the disease. In the recent past, it has been noticed that there is a gradual increase in the incidence of multiple sclerosis in the world's population. Iran found to have maximum number of MS patients in the Persian Gulf. According to the latest statistics, there are about 70000 cases of MS in a population of 81 million (2). The exact aetiology is unknown. But the following factors such as genetic abnormality, autoimmunity and various environmental factors are incriminated in the aetiopathogenesis of this disease. In addition, factors like

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sex, age, the geographical location and the local racial characteristics may also play a role in the aetiopathogenesis of MS (3). MS is generally more common in the areas away from the equator, especially at a latitude of 40 degrees North and South (4)..Studies showed that MS is seen in all races but the increased prevalence is reported among north European races (5, 6). The prevalence of familial MS is higher than in general population in certain geographical locations (7, 8, 9, 10, and 11). The aim of this study is to investigate the prevalence of familial multiple sclerosis in Ardabil province of Iran.

Methods

This cross-sectional study was performed from the beginning of the January 2017 to December of 2018. 611 patients were selected from the Ardabil MS Registry. The presence of disease was confirmed based on McDonald Criteria by the trained neurologist. The Data collected included demographic and clinical information of all the patients such as sex, age, presence of familial history, area of residence signs and symptoms of the disease. The collected data was analyzed by using SPSS version 19. The p value of <0.05 was considered significant.

Results

The total number of patients was 611. Out of which the females were found to be 440 (72%) and male were found to be 171 (28%). The male to female ratio was found to be 1:2.57. However the incidence of familial MS was found to be 85. Male patient were found to be 23 amongst the total number of 171 patients (13.5%). The female patients were 42 amongst the total number of 440 (14.1%)

The mean age of patients with familial MS was found to be 36.1 +/- 9.5 years and without familial history was found to be 35.1 +/- 9.3 years. Statistically the difference between familial and non familial MS was not significant.

Out of total 611 patients 81 patients had some co morbid conditions (13.3%), such as diabetes mellitus, cardiac diseases etc. However amongst familiar MS patients of 85, 17 patients had some co morbid condition (21%), which is statistically significant.

Similarly the signs and symptoms among the familial MS vary from the patients of non familial MS. For example optic neuritis was found to be 17.5% in total number of MS patients, but in familial MS patients it was found to be only 10.3%. Diplopia was found to be 12.9% in total number of patients of 611, whereas in familial MS it was found to be 15.2%. Cerebral disorders were found to be 10% in non familial MS patients and 13.1% in familial MS patients. Motor disorders was found to be 20.6% in non familial MS patients and 13.3% in familial MS patients (Table.1).

Characteristics		n	%	FMS	n	%
Sex	m	171	28	+	23	13.5
	f	440	72	-	148	86.5
Underlying disease	+	81	13.3	+	62	14.1
				-	378	85.9
	-	530	86.7	+	17	21
				-	64	79
Presenting Symptoms	Optic neuritis	107	17.5	+	68	12.8
	Diplopia	79	12.9	-	462	87.2
				+	11	10.3
	Cerebral disorders	61	10	-	96	89.7
				+	12	15.2
	Motor disorders	126	20.6	-	67	84.8
				+	8	13.1
	Sensory disorders	181	29.6	-	53	86.9
+				21	16.7	
				-	105	83.3
				+	24	13.3
				-	157	86.7

Table1.Relationship between prevalence of FMS and patient characteristics



Discussion

There has been a gradual increase in the incidence of multiple sclerosis in the world population in the recent past. However the incidence was found to be low in Iran. However the incidence of familial MS was found to be more in Iran when compared to other countries. This study was aimed to compare the incidence of familial MS in Ardabil province when compared to the other province of Iran.

Our study revealed the ratio of familial MS to general incidence was found to be 1:72 which was almost similar to other provinces in Iran, like East Azerbaijan rate of 7.1, Zanjan with 7.3 and Mazandaran with 7 (12,13,14). In addition the pooled prevalence rate of familial MS was about 11% for Iran but our study revealed the prevalence rate of approximately 13.9% which was higher (15). Nielsen et al utilized a nationwide registry data and reported that risk of MS in familial with a positive history of MS was seven times more than normal population (16). In a study in Jordan, the prevalence of family history of MS reported to be 9.4% (17). In another study with 35 years follow up, it has been identified a high familial rate, almost 32.7% suggesting as genetic susceptibility (18). Familial MS was found to be more common among first and third degree relatives as per a study by Toghaianifar et al in Isfahan (19). Nielsen et al reported that the first degree relatives have 2.5% excess risk irrespective of their gender (16). Carton et al also reported 10-12 fold increased risk of MS for second degree relatives in their observed population (20).

Population based studies have shown that the recurrence rate of MS ranged from 20% to 30% in monozygotic twins and 5% in dizygotic twins (21). Although MS is higher in women in the general population, in the same study it was not revealed so. However, in a study in Isfahan province of Iran in 2014 in familial MS male to female ratio was 1:2.6(19). The study in Khuzestan province of Iran also revealed that positive family history of MS was significantly higher among men, but there was not much of difference in the general population (22) As far as age of the familial MS patients was concerned, a study in Isfahan province of Iran found out nor much of a difference between familial and non familial MS patients (23). However, a study in Spain found that familial MS presented about 8 years sooner than non familial MS (22years vs. 30 years) (24). In another study of PPMS patients, familial PPMS patients were found to be significantly younger at the onset of disease (n= 84, median age: 37.6 years) than patients, sporadic disease (n= 327, median age: 42.7 (25).

The most common symptoms among patients with FMS were motor symptoms and diplopia approximately 16.7% and 15.2% respectively in our study. However in the Toghaianifar et al study, sensory symptoms and visual symptoms were common with the incidence of 40.7% and 27.7% respectively (19). In yet another study of Akbari et al, optic neuritis and sensory symptom was common with the incidence of 3.6% and 30.3 % respectively (26).

Conclusion

Our results showed that familial MS in Ardabil province of Iran is lower than other provinces in Iran. The incidence of female patients is more than male population in FMS, when compared to non familial MS. It is recommended to do non studies to do more studies to know genetic and environmental factors in the aetiology of familial MS.

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