

CLINICAL NOTE

MULTIPLE SCLEROSIS: A RISK FACTOR ANALYSIS IN IRAN

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Background– Multiple sclerosis (MS) is one of the most common acquired demyelinating diseases with geographic variability in both prevalence and incidence. The goal of this study was to review the epidemiologic data and to assess the risk factors for MS in Iran.

Methods– From 1997 to 1999, 149 definite cases of MS were selected for study. The disease was confirmed according to clinical information and magnetic resonance imaging (MRI) findings by a neurologist and radiologist. The patients were evaluated by interview and a questionnaire. A control group of 100 sex- and age-matched non-neurologic patients were also enrolled in the study.

Results– The male–female ratio was 1:1.2. Among female cases, the disease began in 61% soon after childbirth. Depression was noted in 67% of the patients. Fourteen percent of patients had a history of about one year in the recent war between Iran and Iraq. Fifty percent of patients had a history of viral exanthemas during childhood.

Conclusion– MS appears to be prevalent in Iran, necessitating a large cohort study to evaluate a precise risk factor analysis.

Keywords • incidence • Iran • multiple sclerosis • prevalence

Introduction

Multiple sclerosis (MS) is one of the most common diseases of the central nervous system.^{1,2,3} There is a substantial geographic variation in terms of epidemiology of the disease. The prevalence is much less in equatorial areas and both poles, but more prevalent in Northern Europe and Scandinavia.⁴ This variation may be attributable to genetic as well as environmental factors, especially infections.

Several studies have shown an increasing rate of the disease.^{5,6} In a previous study conducted 9 years ago in Fars Province, the crude prevalence was estimated to be 5.3 per 100,000 population.⁷ In an attempt to identify a genetic susceptibility of Iranian patients to MS, a study was performed in Fars Province in which positive associations between haplotypes DR2+, DRB1 1503, DQA

0102, DQB1 0602 were found.⁸ However, no statistically significant association between any specific alleles was reported.

Material and Methods

From December 1997 to September 1999, 149 cases of MS were studied retrospectively. The diagnosis was confirmed by a neurologist and radiologist according to clinical and magnetic resonance imaging (MRI) findings.⁶ A control group of 100 sex and age-matched non-MS, non-neurologic patients was also selected. All patients, controls and/or their first relatives were asked to take part in an interview and to complete a preformed questionnaire. Using SPSS software (SPSS for windows, release 9.0 1998, Chicago, Illinois, USA), odds ratios were calculated.

Results

The cases comprised 68 males and 81 females with a male-to-female ratio of 1:1.2. The age of the

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Table. Comparison of risk factors between multiple sclerosis (MS) patients and sex- and age-matched non-neurologic controls (%)

	History of severe trauma	History of major surgery	History of pregnancy	Major anxiety disorder	Major depression	Attendance in war	History of viral exanthemas
MS patients	22.9	35	61	67	10	14	51
Controls	12	12	7	15	1	2	8
Odds ratio	2.16	3.93	20.84	11.56	11.08	8.03	11.97

patients was 32.7 ± 6.5 (mean \pm SD) years. None of the patients were members of the same family.

A positive history of trauma including bone fracture and severe soft tissue injuries before commencement of the symptoms was noted in 22.9% of cases. Thirty-five percent had undergone major surgery and general anesthesia. Among females, 61% revealed the symptoms relevant to the disease shortly after childbirth. Among them, 20% had a postpartum flare-up of the symptoms. Anxiety and irritability were documented in 67% of the cases. Ten percent of cases reported a period of major depression followed by hospital admission. Fourteen percent of the patients participated in the Iran-Iraq war (1987–1997) for 12 ± 2.5 months before the initiation of the disease. Fifty percent had a history of skin rashes resembling viral exanthemas. The control group was compared statistically with those of the patients. In this study, socioeconomic status of the patients was also determined. A significant proportion of the patients were of a low socioeconomic and cultural level. History of pregnancy, viral exanthemas, major anxiety disorders, major depression, taking part in war, major surgery and severe trauma were among those risk factors for which a significant odds ratio was obtained (Table).

Discussion

The uneven distribution of MS worldwide has been the subject of investigation over the last few decades.⁶⁻⁹ Although the main cause of MS is still unclear, genetic susceptibility as well as epidemiologic factors including age, latitude, trauma, gender, pregnancy, race, viral infections, vaccination, use of contraceptives, psychologic and behavioral factors have been investigated.⁹⁻¹⁰ Antibody levels for measles, rubella, herpes, human T-cell lymphotropic virus 1, Epstein Barr virus and other viruses in the cerebrospinal fluid of MS patients indicate that viral infection may play a role as a contributing factor in the emergence of

the disease.

The mean age of MS patients in this study (32.7 years) was approximately the same as reported in other studies from Iran and elsewhere;¹¹⁻¹⁵ however, the male/female ratio was lower in our study (1:1.2 compared with 1.52:1 from one previous study in Iran).¹⁴

In order of frequency, the most common precipitating factors in this study were: pregnancy, viral exanthemas, major anxiety disorders, major depression, taking part in war, major surgery and severe trauma.

Geographically, MS occurs in three zones in terms of frequency: 1) high-frequency zones, i.e. a prevalence of over 30 per 100,000 population comprising most of Europe, Canada, northern USA, New Zealand, southern Australia and eastern Russia; 2) medium-frequency zones, i.e. prevalence, 5–30 in 100,000 population including South Africa, southern Mediterranean, and the Ukraine; and 3) low-frequency zones, i.e. prevalence, less than 5 in 100,000 including the remainder of Asia and Africa.^{5,9,12} In recent years, the increasing incidence of MS in Iran has been a matter of interest for investigators. Studies on the role of genetic factors contributing to this disease have failed to prove any significant association between MS and genes of the major histocompatibility complex in this region.⁸

Factors such as infection, physical trauma, surgery stress, psychobehavioral stress and childbirth may each have cumulative effects on the rate of occurrence of MS.

An extensive nationwide epidemiologic study for determining the incidence and prevalence of MS and a large cohort study to identify the risk factors for MS among Iranians is strongly recommended.

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