ORIGINAL ARTICLE

Epidemiological Survey of Multiple Sclerosis in East-Azerbaijan Province, Iran, 2014

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ABSTRACT

Background: Multiple sclerosis (MS) as a chronic disease of the central nervous system have the very prevalent in worldwide. Its epidemiology is different region by region, and most of the geographical and environmental factors may play a role in its incidence. We designed this study to analyze demographic characteristics of MS. **Methods:** This survey has been conducted in East-Azerbaijan province, northwest of Iran. Prevalence of the MS has been measured using data from Committee for Diagnosis and Treatment of MS in 2014. Age, gender, and type of the disease also had been investigated in this research. Independent T-Test, Chi-square, Pearson and Fisher's exact test used to analyze data by SPSS21. **Results:** We had 2774 MS patients in 2014. Of them, 726 (26%) were male and 2003 (73%) were female. The mean age of males and females was 38±9 years and 37.09±9 years, respectively. The mean age of male patients significantly was higher than females (P=0.001). We measured 73.26 prevalence per 100000 populations in East-Azerbaijan province. **Conclusion:** Prevalence of the MS showed a significant increase in 5 years compared to previous studies. Because of disease's dishabilitating entity more interventional investigations are recommended to perform in preventing disease incidence or improving the quality of life of sufferers and increasing their life expectancy.

INTRODUCTION

Multiple sclerosis (MS) as one of the chronic diseases attacks central nervous system (CNS) (1). It has an unknown origin, but genetic and immunological factors play a role in the pathophysiology of illness (2).

For the first time, MS was introduced in 1837 by Carswell and Caruneiheir, and then histology of its lesions has been described (3,4). Three years later, clinical diagnosis for MS has been identified by Frerichs (5). Association between histopathological changes and its clinical findings explained for the first time in 1868 (6).

National MS Association of America has reported that 2.5 million people are suffering from this disease all around the world. Iranian MS Society reported 50000 MS patients in Iran during 2007 (7-10). Mean prevalence of the MS have been reported 15-30 in 100000 populations according to Payamani's study, but 55-98 in 100000 reported by Elhami et al. in Tehran, the capital of Iran (13,14).

Hashemilar et al. reported 27.7 in 100000 for the MS in East-Azerbaijan province, northwest of Iran in 2009 (15).

This condition has variable prevalence in a different region, and some geographical risk factors seem to affect the incidence. Hence, this study was aimed to analyze MS demographic characteristics in East-Azerbaijan province in 2014, which has 47.830 km² area and about 3.7 million populations in the northwest of Iran (16).

METHODS

This cross-sectional study has been conducted in East-Azerbaijan province in Iran. This country has about 78 million population, and 3.7 million of them are East-Azerbaijan residents based on the national census in 2011.

Patient Selection

The study population was all the MS patients in this province during 2014. All the sufferers of this disease are being registered in Committee for Diagnosis and Treatment of MS (CDTMS) which operates numbers attends of Neurology Department of Tabriz University of Medical Sciences.

Neurologists in East-Azerbaijan that diagnose the MS refer their patients to this committee to confirm the diagnosis and patients are being registered after further evaluations and diagnosis approval. All the patients that were registered in CDTMS and were being treated in 2014 with confirmed diagnosis of MS included. The diagnosis and classification of patients were based on McDonald criteri (The McDonald criteria use magnetic resonance imaging evidence extensively and can allow for a diagnosis of MS to be made by one relapse, given the right evidence from scans).

Data Collection

Data of the patients was gathered by researcher made checklist with research variables including, patient demographics, the age of disease onset and clinical form of the disease. Checklists were filled from an electronic database of patients' medical recordings at CDTMS office in Tabriz University of Medical Sciences.

Data Analyses

Data have been entered in SPSS software version 21, and descriptive statistics were used to analyze data (mean, standard deviation, percentage, maximum, minimum, etc.). Independent T-test was performed to compare means. Chi-square was employed by Pearson and Fisher exact tests to compare qualitative parametrical and non-parametrical data, respectively. A p-value less than 0.05 have been considered as significant.

RESULTS

Our study included all MS sufferers up to 2014, and its prevalence was meagered 73.26 per 100000 people. East-Azerbaijan had 3.6 million population, and it had been raised to 3.7 million in our study.

Also, the source of data and inclusion criteria were the same in both studies, the prevalence of the disease showed dramatically increase in 5 years (Figure 1). The frequency of the disease has been raised from 1000 to 2779 (269 to 726 in male and 731 to 2003 in female). Indeed, we had 2774 MS patients in 2014 in East-Azerbaijan. Of them, 726 (26%) were male and 2003 (73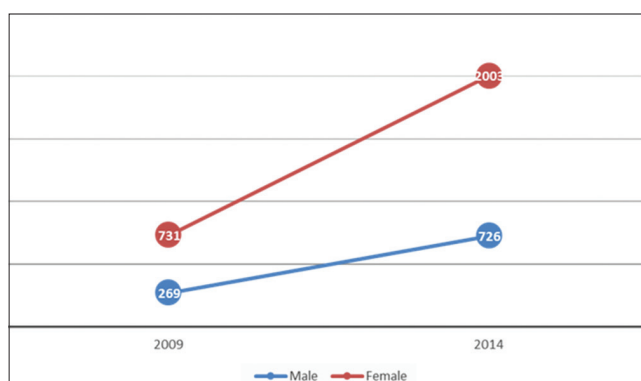%) were female and female to male ratio was 2.76. The mean age of males and female was 38±9 years and 37.09±9 years, respectively.

The mean age in male patients significantly was higher than in females (P=0.001). The mean age of diagnosis in males and female was 30±9 and 29±9 years, respectively. There was a significant difference between mean age of diagnosis in male and female patients (P=0.015).

Thirteen- three (5.33%) of males and 97 (5.69%) of females had early onset MS, which was the significantly higher rate in female (P=0.000). One hundred and ninety (7%) patients were illiterate, 795 (29%) had primary education degrees, 885 (32%) had secondary education degrees, and 828 (30%) had university college degrees. Among the patients, 2554 (95%) had the ability to walk, but 127 (4%) didn't (Figure 2).

DISCUSSION

Our result showed that most of MS patients are females and its being diagnosed in 1-2 years earlier in this gender same as other reports (17,18,19,20). The mean age of diagnosis was in the late twenties both in men and women in this study, which was lesser and higher than Qom and Tehran studies, respectively (21-22).

In spite of geographical features, it could be understood that the disease is diagnosed earlier in more developed regions (23-24). About 5 percent of patients had early onset of the MS that had been symptomatic for ages younger than sixteen years old. Also, the prevalence of early onset disease was higher in women; it consists lower number of the patients in sum. Our study replicated findings of other investigations that show more incidence of MS in older ages. Female to male ratio was lower than most of other studies conducted in Iran (25-27). It indicates that gender distribution of the MS is more equipoised in our area compared to other provinces of our country, but it does not degrade more prevalence of MS in females (21,22,28). The mean age of the patients and age of their diagnosis was significantly higher in males than females same as previous studies (15,21,29). The MS was more common (50.04%) in 25-34 years age group than the other age groups. In Saei's report, most of the patients (38%) were between 30 to 35 years age group, but fur-
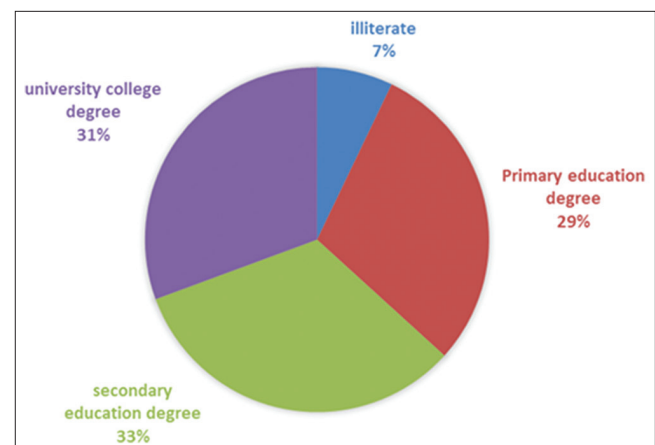

Figure 1. Prevalence of MS throught 5 years

Figure 2. Education degree of patients

ther information has not been mentioned in their article (22). Some environmental and infectious factors have been mentioned as the risk factors such as smoking and Epstein–Barr virus exposure (20). In some other studies correlation of Vit D deficiency and sun exposure with risk of MS has been investigated (30-32) and reported that Vit D deficiency or lower sunlight exposure in childhood might make people susceptible to MS in adolescence (33). However, the mechanism of these factors in MS pathophysiology is not clearly understood, and additional studies should be performed to evaluate underlying mechanisms (34,35). Unfortunately, in the current study, we could not study risk factors of MS due to some limitations.

In our study, relapsing-remitting MS was the most common type that was similar to other reports (14, 21). In 2009, Hashemilar et al. had a survey with the same study method and place and reported MS prevalence was 27.7 per 100000 people in East-Azerbaijan province with the 3.6 million populations according to 2006 national census (15). This increase in MS prevalence in 5 years might have several reasons such as changing in dietary and habitual patterns and developing westernization. If we look optimistically, this significant increase in prevalence can also be due to the improvement of diagnostic methods such as developing magnetic resonance imaging techniques and even overdiagnosis.

Gender distribution of the MS was the same in both surveys, which suggests that regardless of rising prevalence, its growth is balanced.

CONCLUSION

The MS involves young adults that play a major role in developing countries and growing economies. Because of disease's dishabilitating entity more interventional investigations are recommended to perform in preventing disease incidence or improving the quality of life of sufferers and increasing their life expectancy.

AUTHORS CONTRIBUTION

Samad Shams Vahdati, and Reza Dehghan Hesari designed and performed study; Hossein Mazouchian wrote and revised the manuscript; Behzad Yousefi helped for data collection and analysis, and Hossein Mazouchian and Behad Yousefi participated in all stages of the work.

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