Original Article

Risk factors for multiple sclerosis in Pakistani population- A cross-sectional study

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Abstract
Multiple sclerosis (MS) is an inflammatory disease of the brain and spinal cord where it damages the myelin sheath protecting the neurons. Many environmental and genetic factors have been associated with MS. The aim of this study is to identify the possible risk factors that are linked to MS in Pakistani population. This study was conducted in Department of Radiology, Mayo Hospital Lahore from 2013 to 2014. The first hundred patients who came for reporting MRI of the brain and had positive findings of MS were retrospectively evaluated. Mean age of the patients was 43.07±13.88 years, with youngest patient as 18 years old and eldest as 65 years. Our study depicted 19% cases of MS were smokers. 8% of the patients had positive history for viral infections. 8% of the patient had low level of serum vitamin D and 30% of the patients had positive family history. Current study shows viral infections, smoking, and hypovitaminosis D as frequently associated with MS.

Keywords: Multiple sclerosis (MS), hypovitaminosis D, Epstein-Barr virus, Smoking


INTRODUCTION

Multiple sclerosis (MS) is an inflammatory disease of the brain and spinal cord where it damages the myelin sheath protecting the neurons. Many environmental and genetic factors have been associated with MS. The aim of this study is to identify the possible risk factors that are linked to MS in Pakistani population. This study was conducted in Department of Radiology, Mayo Hospital Lahore from 2013 to 2014. The first hundred patients who came for reporting MRI of the brain and had positive findings of MS were retrospectively evaluated. Mean age of the patients was 43.07±13.88 years, with youngest patient as 18 years old and eldest as 65 years. Our study depicted 19% cases of MS were smokers. 8% of the patients had positive history for viral infections. 8% of the patient had low level of serum vitamin D and 30% of the patients had positive family history. Current study shows viral infections, smoking, and hypovitaminosis D as frequently associated with MS.

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this study is to highlight the possible risk factors that are associated with MS in Pakistani population. Some of the risk factors, as reported in literature, are summarized in flow chart below (Fig. 1).

**MATERIALS AND METHODS**

This study was conducted in Department of Radiology, Mayo Hospital Lahore from 2013 to 2014. The first hundred patients of both gender, aged 18 - 65 years who came for reporting MRI of the brain and had positive findings of MS were retrospectively evaluated for the risk factor for multiple sclerosis. Imaging was performed on MR system acquiring T1W, T2W, Proton density, FLAIR and T1W post gadolinium sequences. The study plan was approved from ethical committee of King Edward Medical University. Their detailed clinical history was taken and recorded in a preformed proforma. All the data were coded and analyzed using SPSS version 21.

**RESULTS**

Mean age of patients was 43.07 ± 13.88 years (Fig. 2). 57 % were females and 43 % were males. 8 % of the patients had low level of serum vitamin D (Fig. 3). Vitamin D deficiency was mainly reported in females. The reason may be less sunlight exposure in females because of social and cultural norms in our region. The 30 % of the patients had positive family history. Environmental factors e.g. viral infections such as Epstein Barr Virus (EBV) were associated with MS. There were 8% patients with positive history for viral infection (Fig. 4). 19% cases of MS were smokers (Fig. 5). Increased smoking trends in females have resulted in an increase in prevalence of MS among females worldwide but in our study MS was predominant in males and smoking too.
DISCUSSION

The actual cause of MS is still not clear, however many genetic and environmental factors are thought to play role in it’s etiology depending on the region. In some studies, it has been reported that monozygotic twins may have chances of up to 30% of being affected with MS (Mumford et al., 1994). Migration alters the risk of MS (Ebers et al., 1986) and distance from equator also affects its prevalence (Kurtzke, 1980). Multiple Sclerosis is relatively more common in females as compared to males 3.2:1 in developed countries (Orton et al., 2006), while it is 1.3:1 in Pakistani population which is comparatively less. It shows slightly more involvement of males as with respect to other countries. The mean age of onset of MS in other countries is about 30 years, and maximum chances of onset is 23-24 years. Approximately, 70% of the patients get affected between the ages of 20 to 40 years (Orton et al., 2006). The data about average age in Pakistani population, found in our study was more than 30 years as compared to lower average ago (>30 years) in Western countries. Several environmental factors affect the prevalence of MS. Vitamin D levels affect female preponderance regarding the MS. Some studies conducted in Norway suggested an increase in MS incidence in fish farming regions, apart from the fact that fish oil is rich in vitamin D which relatively compensates the deficiency of UV or vitamin D supplements (Kampman and Brustad, 2008). Maghziet al. (2010) suggested that the ratio in females increased because of environmental factors including vitamin D insufficiency (Maghziet al., 2010). Viral infections have also been associated with MS. Several infections have been suggested to have a link with MS such as previous history of EBV infection, causing Infectious Mononucleosis (IM). Increased smoking trends in females have resulted in an increase in prevalence of MS among females. Previous studies have shown that smoking is linked with increased incidence of secondary progressive disease (D’Hooghe et al., 2012).

Awareness regarding exercise, sun exposure and healthy life style should be promoted as a prevention measure for MS. Due to scarcity of already available data regarding MS in Pakistan, there is much needed to improve human health awareness among the masses for identifying all the possible risk factors and early diagnosis and detection with the help of latest techniques like MRI.

Conclusion

The etiology of MS is a complicated interplay between environmental and genetic factors. Although, the causative agents of MS are unclear, this study shows that viral infections, smoking, and hypovitaminosis D are frequently associated with MS.

Conflict of Interest

Authors declare no conflict of interest.
REFERENCE


