

## ASSESSMENT OF HEADACHE TYPE, FREQUENCY AND FINDINGS IN PATIENTS WITH MULTIPLE SCLEROSIS

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### Abstract

**Background:** To assess headache type, frequency and findings in patients with multiple sclerosis. **Materials and Methods:** Fifty- two cases of multiple sclerosis of both genders were subjected to MRI scan of brain taken with Toshiba machine. Clinical symptoms, type of headache, expanded disability status scale (EDSS) and location of the lesion was recorded. **Result:** Out of 52 cases, males comprised 32 (61.5%) and females 20 (38.4%). Location of lesion was pericallosal in 14 patients, juxtacortical in 12, cerebellar in 16 and infratentorial in 10 cases. The difference was non- significant ( $P > 0.05$ ). Multiple sclerosis cases were seen without headache in 24 cases, tension type headache in 11 and migraine in 17 cases. The difference was significant ( $P < 0.05$ ). Most patients had polysymptomatic (18) with EDSS score 2.3, motor symptoms (12) with EDSS score 2.0, optic symptoms (10) with EDSS score 1.5, cerebellar symptoms (5) with EDSS 2.6, cranial (4) with EDSS 1.8 and sensory (3) with EDSS score 1.3. The difference was significant ( $P < 0.05$ ). **Conclusion:** There was a strong connection between multiple sclerosis and primary headache. Most of the patients had migraine type of headache as compared to tension type of headache.

## INTRODUCTION

Multiple sclerosis (MS) is a chronic, likely autoimmune, demyelinating, and degenerative disease of young adults that spreads throughout the central nervous system (CNS)'s white and grey matter, is characterised by flare-ups and remissions, and is thought to be brought on by intricate interactions between genetic and environmental factors.<sup>[1,2]</sup>

In MS, the immune system targets the protective covering of nerve fibers called myelin. This causes inflammation and damage to the myelin, disrupting the normal flow of electrical impulses along the nerves.<sup>[3]</sup> The damaged areas, known as lesions or plaques, can appear in different parts of the CNS and vary in size and severity.<sup>[4]</sup> The exact cause of multiple sclerosis is not known, but it is believed to involve a combination of genetic and environmental factors. Some potential triggers or risk factors that have been identified include certain infections, smoking, vitamin D deficiency, and a family history of MS.<sup>[5]</sup>

The symptoms of multiple sclerosis can vary widely among individuals and depend on the location and extent of nerve damage.<sup>[6]</sup> Common symptoms include fatigue, difficulty with coordination and

balance, muscle weakness, numbness or tingling sensations, problems with vision (blurred or double vision), cognitive changes, and problems with bowel or bladder function. The symptoms can come and go or gradually worsen over time.<sup>[7]</sup> We performed this study to assess headache type, frequency, and clinical and radiological findings in patients with multiple sclerosis.

## MATERIALS AND METHODS

After considering the utility of the study and obtaining approval from ethical review committee, we selected fifty- two cases of multiple sclerosis of both genders. Patients' consent was obtained before starting the study.

Data such as name, age, gender etc. was recorded. A thorough systemic examination was carried out. All were subjected to MRI scan of brain taken with Toshiba machine. Clinical symptoms, type of headache, expanded disability status scale (EDSS) and location of the lesion was recorded. EDSS steps 1.0 to 4.5 refer to patients who are fully ambulatory and the precise step number is defined by the Functional System score(s). EDSS steps 5.0 to 9.5 are defined by the impairment to ambulation and usual equivalents in Functional Systems scores are

provided. The results were compiled and subjected for statistical analysis using unpaired T test. P value less than 0.05 was set significant.

## RESULTS

Out of 52 cases, males comprised 32 (61.5%) and females 20 (38.4%) [Table 1].

**Table 1: Patients distribution**

Total- 52		
Gender	Males	Females
Number (%)	32 (61.5%)	20 (38.4%)

**Table 2: Location of lesion**

Location	Number	P value
Pericallosal	14	0.85
juxtacortical	12	
Cerebellar	16	
Infratentorial	10	

Location of lesion was pericallosal in 14 patients, juxtacortical in 12, cerebellar in 16 and infratentorial in 10 cases. The difference was non- significant ( $P > 0.05$ ) [Table 2].

**Table 3: Type of headache**

Headache	Number	P value
Migraine	17	0.05
Tension type	11	
Without headache	24	

Multiple sclerosis cases were seen without headache in 24 cases, tension type headache in 11 and migraine in 17 cases. The difference was significant ( $P < 0.05$ ) [Table 3].

**Table 4: Association between initial symptoms and EDSS scores**

Initial symptoms	Number	Mean EDSS score	P value
Cerebellar	5	2.6	0.04
Optic	10	1.5	
Cranial nerve	4	1.8	
Polysymptomatic	18	2.3	
Motor	12	2.0	
Sensory	3	1.3	

Most patients had polysymptomatic (18) with EDSS score 2.3, motor symptoms (12) with EDSS score 2.0, optic symptoms (10) with EDSS score 1.5, cerebellar symptoms (5) with EDSS 2.6, cranial (4) with EDSS 1.8 and sensory (3) with EDSS score 1.3. The difference was significant ( $P < 0.05$ ) [Table 4].

## DISCUSSION

Certain genes have been identified that may increase the risk of developing MS, although the exact genetic mechanisms are not fully understood. Several environmental factors have been linked to MS, including vitamin D deficiency, certain infections (such as Epstein-Barr virus), smoking, exposure to certain toxins, and geographical location (MS is more common in temperate climates). It is believed that a combination of genetic predisposition and exposure to environmental triggers leads to the development of MS. The specific trigger or triggers and the exact sequence of events that lead to the onset of MS remain unclear.<sup>[8]</sup> A combination of medical history assessment, neurological examination, and several tests, including magnetic resonance imaging (MRI), spinal fluid analysis, and evoked potentials, are

frequently used to diagnose MS. These tests support the presence of MS and help to rule out other illnesses. Despite the fact that there is no known cure for multiple sclerosis, there are treatments that can help with symptom management, disease progression, and quality of life.<sup>[9]</sup> Drugs, such as disease-modifying medications, can help lessen inflammation, cut down on relapses, and slow the course of impairment. To control certain symptoms and improve general wellbeing, rehabilitation methods, physical therapy, and lifestyle changes may also be suggested.<sup>[10]</sup> We performed this study to assess headache type, frequency, and clinical and radiological findings in patients with multiple sclerosis.

Our results showed that out of 52 cases, males comprised 32 (61.5%) and females 20 (38.4%). Demetgul et al,<sup>[11]</sup> found that of the 320 patients included in the study, 70.6% were female ( $n = 226$ ) and 29.4% were male ( $n = 94$ ). Gee et al,<sup>[12]</sup> included 277 patients with the diagnosis of MS, with males 207 and females 70. Putzki et al,<sup>[13]</sup> studied 490 patients of 491, with 32% males and 68% females. Rościszewska- Żukowska et al,<sup>[14]</sup> in their study, the study group ( $n = 419$ ) consisted of 287 (68.4%) women and 132 (31.6%) men.

We observed that location of lesion was pericallosal in 14 patients, juxtacortical in 12, cerebellar in 16 and infratentorial in 10 cases. In their study, Gee et al,<sup>[12]</sup> found that in individuals with MS plaques near the periaqueductal grey matter in the mesencephalon, the prevalence of migraine, TTH, and migraine with TTH were 4 times, 2.5 times, and 2.7 times higher, respectively.

In this study, multiple sclerosis cases were seen without headache in 24 cases, tension type headache in 11 and migraine in 17 cases. Demetgul et al,<sup>[11]</sup> found that 54.4% had headaches (23.8% had tension-type headaches) (TTH), migraine (30.6%). Putzki et al,<sup>[13]</sup> found mean Expanded Disability Status Scale (EDSS) of 3.2. Headache prevalence was 56.2% (tension type headache 37.2%, migraine 24.6%). Headache prevalence rates did not differ from controls. Headache was not associated with disability or treatment. Trigeminal neuralgia was found in 6.3% of MS cases.

In our study, most patients had polysymptomatic (18) with EDSS score 2.3, motor symptoms (12) with EDSS score 2.0, optic symptoms (10) with EDSS score 1.5, cerebellar symptoms (5) with EDSS 2.6, cranial (4) with EDSS 1.8 and sensory (3) with EDSS score 1.3. Demetgul et al,<sup>[11]</sup> found that the EDSS on average was 2.6. Depending on the localization, pericallosal lesions may be present. In patients with TTH, the mean disease duration was 9.9 years, but in individuals with migraine, it was 4.5 years. Patients with TTH had a mean EDSS value of 4.7, while those with migraine had a score of 1.8.

Rościszewska- Żukowska et al,<sup>[14]</sup> in their study, 236 (56%) of the RRMS patients had primary headaches, with a higher frequency in women (ratio of 2:1). The most prevalent headache type was migraine, which affected 174 people (41%), followed by tension-type headache, which affected 62 people (14%), migraine without aura, 53 people (30%), and probable migraine without aura, 41 people (23%). Contrary to tension headaches, female sex was not a risk factor for migraines. Most migraines began before the beginning of MS. Aura-accompanied migraine was linked to advanced age, a longer disease course and a lower SDMT. Aura-related migraines in particular ( $p = 0.035$ ) were linked to longer DMT times. Headaches during clinical isolated syndrome (CIS) ( $p = 0.001$ ) and relapses ( $p = 0.025$ ) were typical for migraine with aura.

Fragoso et al,<sup>[15]</sup> analysed the presence and impact of migraine in MS patients. There were 625 women and 121 males among the patients, and 69% of them were between the ages of 20 and 40. 404 individuals (54.1%) had migraine symptoms diagnosed, and 68.3% had a moderate-to-high illness burden. Patients with MS frequently and severely experience migraines as their major headache type.

Kister et al,<sup>[16]</sup> compared the radiographic and clinical characteristics of MS patients with migraine to those of an MS control group free of headache.

The prevalence ratio (PR) for migraines among 204 MS patients was three times greater than it was in community controls for both women (55.7 vs. 17.1%; PR = 3.26;  $p < 0.001$ ) and men (18.4 vs. 5.6%; PR = 3.29;  $p < 0.001$ ). Trigeminal and occipital neuralgia, facial pain, Lhermitte's sign, temporomandibular joint pain, non-headache pain, and a history of depression were all significantly associated with migraine in MS patients ( $p < 0.01$ ) in a series of logistic regression models that controlled for age, gender, disease duration, use of -interferon, and depression. Villani et al,<sup>[17]</sup> studied 102 MS patients and found that the lifetime prevalence of primary HA was 61.8%. Younger relapsing-remitting MS patients experienced migraines more frequently, but tension-type HA was linked to older age, male gender, and a secondary progressive course. Sixty-four individuals had previously or currently been exposed to interferon beta (IFN $\beta$ ). Of these, 24 reported a rise in the frequency of migraine attacks, whereas 7 reported an IFN $\beta$ -induced HA. Of the remaining 17 participants, 17 had no history of HA.

## CONCLUSION

There was a strong connection between multiple sclerosis and primary headache. Most of the patients had migraine type of headache as compared to tension type of headache.

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