

## Prevalence, Severity of Pain in Patients with Multiple Sclerosis (MS)

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### ABSTRACT

The importance of background information in several studies has been emphasized and since controlling and early treatment of the disease, prevention and finding ways to control the intensity of the disease and thus faster rehabilitation of patients are necessary, in this paper, symptoms, severity and type of pain will be discussed. This descriptive-analytic study was conducted on 200 patients with MS who referred to Ayatollah-Kashani Hospital in Isfahan 2015. Data gathering tool was a questionnaire 3section including of personal / disease characteristics, McGill Pain Questionnaire, Visual Analog Scale (VAS) and Pain Rating Index(PRI). Pearson and Spearman statistical tests, independent t-test, and Chi-square were carried out using SPSS version16 to analyze the data. 57.5% of the subjects have experienced pain and 42.5% did not report pain. Based on VAS and PPI, mean of pain severity were 5.5 (2.9) and 2.3 (1.5), respectively. The lowest prevalence of different types of pain belonged to sharp pain (95.7%) and also deadly pain and pain similar to tissue rupture (93.9%). The prevalence of pain is high and severity is moderate in MS patients. So attention to treatment and psychological consult may be effective this patient by health care personnel.

**Key words:** Prevalence, pain, Multiple Sclerosis

### INTRODUCTION

MS is a chronic inflammatory disease of the central nervous system that typically begins in the second and third decades of life and is two times more common in women than in men. The disease mainly involves young and active people between the ages of 20-40 years old<sup>1,2</sup>.

Although the cause of the disease is unknown, reviewing the mechanism of the disease represents impairment of the immune system and destruction of myelin-making cells. So that the immune system attacks the central nervous system and causes the loss of the myelin sheath in the central nervous system<sup>3</sup>.

The prevalence of MS depends on several factors, including geographical situation, genetics and infectious diseases. In general, the spread of the disease around the world between the ages of 17-65 years old has been estimated about 1 million people. Iran and other Middle East countries are also among the low-risk areas; however, the prevalence of this disease has been reported 0.0355 percent and 0.0438 percent<sup>4,5</sup>. In relation to the risk of development of MS, Iran is among the first ten countries in the world and Isfahan is considered as intermediate risk area for MS. This suggests that MS must be addressed in Isfahan, and characteristics of the patients should be evaluated so that protocols or guidelines on the prevention of the disease can be written and perhaps its

frequency can be controlled or timely rehabilitation of patients can be implemented<sup>4, 6</sup>.

The disease is along with a wide range of incidence of physical, mental and sometimes psychological signs and symptoms. Signs and symptoms are unpredictable and vary from one person to another. Symptoms of MS include: weakness, fatigue, dizziness, numbness, neuromuscular disorders in various systems including ataxia and gait abnormalities, paralysis, tremors, spasms, muscle stiffness, vision disorders (nystagmus, diplopia, reduced vision, etc.), speech problems, bladder dysfunction (hypotonic and hypertonic bladder), bowel (constipation and diarrhea), memory loss, sexual problems, mood swings, isolation and pain<sup>1,7,8</sup>. The symptoms are different due to pathological changes that occur in the CNS and involved organs. Numerous studies throughout the world show that the most common symptoms of MS are visual changes, pain, fatigue, depression and cognitive symptoms.

Pain among people with MS is a debilitating and recurring symptom; whereas, the nature and effect of pain on the lives of these patients are unknown.

The MS-related pain can be classified as neuropathic, musculoskeletal, or both in nature and it can occur in every part of the body<sup>7-9</sup>. In several studies, the occurrence of pain in patients with MS has been different from 10 to 80 percent.

According to the International Association of MS (2009), the pain associated with this disease is usually categorized into five types. In the first type the pain, as an electric-shock sensation, has been transmitted to the spinal cord; this symptom is called Lhermitte's phenomenon. The second type is a burning and agonizing pain over the whole body; this pain is also referred to as nerve pain. The third type is chronic pain and is often described as a burning and painful pain, or so-called prickling. The fourth type is spasmodic pain which is usually caused by muscle spasms. The last type is musculoskeletal and chronic low back pain which is usually caused due to decreased patient movement. According to a recent study, the most frequent locations of pain in these patients are

related to the legs (74%), back pain (59%), neck pain (52%) and shoulder pain (49%), respectively.

Since little information is available on the possible causes of MS; therefore, studying the demographic characteristics of patients can be helpful. MS risk factors on the basis of demographic data include age, female sex, educational status, marital status, race and ethnicity, family history, economic and social situation, the migration to high-risk areas, weather conditions, geographical factors, microbial factors, psychological and health factors during childhood, stress, smoking, and alcohol consumption, diet, environmental hazards (hazardous waste and radon gas), autoimmune, genetic, vitamin D deficiency, fasting, etc<sup>4, 10, 11</sup>.

The importance of background information (Data Base) in several studies has been emphasized and since controlling and early treatment of the disease, prevention and finding ways to control the intensity of the disease and thus faster rehabilitation of patients are necessary, in this paper, symptoms, severity and type of pain will be discussed.

## MATERIAL AND METHODS

This descriptive-analytic study was conducted on 200 patients with Multiple Sclerosis who referred to Ayatollah-Kashani Hospital in Isfahan in 2015. The sample size in this study was designed to estimate the prevalence of pain in MS patients and consumers of medicine. At error level of 5%, the maximum sample size was estimated 200 samples with the following formula,  $n = \frac{z^2 p(\lambda - p)}{d^2}$  assuming P = 0.5 and D = 0.06 to estimate the prevalence of pain in MS patients and medicine consumers. In this research sampling method was simple random sampling and involved patients who referred to the MS Clinic of Ayatollah-Kashani Hospital. Data gathering tool was a questionnaire and data collection was done through a questionnaire, completed by the researcher.

The first part a questionnaire has been related to personal / disease characteristics (age, sex, age of disease onset, type of disease, the frequency of attacks, duration of the disease, the first sign of the disease, pain and its type, patient's

current symptoms, type and duration of medication) and the second part consisted of Standard McGill Pain Questionnaire, Visual Analog Scale (VAS) and Pain Rating Index (PRI); furthermore, present pain intensity and also overall pain intensity were calculated. Validity and reliability of this questionnaire and also its scientific credibility have been confirmed several times by different researchers, including Melzack (2005)<sup>12</sup>.

After going to the sampling environments, subjects were asked to answer the questionnaire considering their own inclusion criteria (measured by the researcher) and they were aware of the research goals and also completed the informed consent. Inclusion criteria consisted of MS diagnosed by a neurologist, medicine consumption experience, and ability to read and write, and exclusion criteria were unwillingness of the patient to complete the questionnaires. Pearson and Spearman statistical tests, independent t-test, and Chi-square were carried out using SPSS version 16 to analyze the data.

## RESULTS

From a total of 200 patients with MS, the results showed that the mean (SD) age of the patients was 33.7 (9.2) years, with age range of 13 to 60 years and 41.5 % (n = 84) of patients were under 30 years old. 77.6 % (n = 155) were female and 22.5 % (n = 45) were male. In addition to these results, Mann-Whitney test showed there was a statistically significant difference between the age and sex of the patients ( $P = 0.004$ ) so that the mean (SD) age of women was 32.9 (9.3) years and while the mean (SD) age of men was 36.8 (8.1) years. Furthermore, the mean (SD) age of disease onset was 26.2 (8.5) years, with age range of 9 to 58 years. Mann-Whitney test results showed there was a statistically significant difference between the age of disease onset and sex ( $P = 0.004$ ) so that the mean (SD) age of disease onset in women was 25.3 (8.5) years, while the mean (SD) age of disease onset in men was 28.3 (8.1) years. From 200 patients with MS, 67% (n = 134) had recurrent MS and 11% (n = 22) had secondary progressive MS. In addition, the mean (SD) number of attacks over

the last year and last month was 1.1 (1.2) and 0.38 (0.32), respectively; and 93 % (n = 186) experienced attacks of the disease more than 5 times a year and 87 % (n = 174) experienced less than 2 times within the last month. Also the mean (SD) disease duration was 5.1 (1.2) years.

Regarding the first symptom of the disease, the results showed that the highest and lowest of early symptoms of the disease were blurred vision with 30% (n = 60) and fatigue (0.5%) (n = 1), respectively. Twenty-one percent (n = 45) were without current debilitating symptoms and from the people with debilitating symptoms, 20 % (n = 41) experienced tingling and numbness in the limbs and 14 % (n = 28) suffered from tremors and imbalance.

Also 57.5% of the subjects, (n = 115), have experienced pain and 42.5% (n = 85) did not report pain. Based on VAS and PPI, mean and standard deviation of pain severity were 5.5 (2.9) and 2.3 (1.5), respectively. Table 1 represents the severity and types of pain based on the scale of PPI (Table 1).

As can be seen in the table, among the patients who had experienced pain, the most common types of pain belonged to cramp pain and contusion pain. These pains had the highest amount of pain for degrees of mild, moderate and severe, with a total of 53%. After that the excruciating pain was second with 34.8%, 20.9% of which belonged to severe type. The lowest prevalence of different types of pain belonged to sharp pain (with 95.7%) and also deadly pain and pain similar to tissue rupture (each with 93.9%). In this regard, Spearman correlation coefficient showed there was no significant relationship between the severity of pain according to VAS scale and age, sex, age of disease onset ( $p = 0.758$ ), the number of attacks over the last year ( $p = 0.362$ ), and duration of the disease ( $p = 0.246$ ). Also according to the Spearman correlation coefficient, there was no significant relationship between Pain Rating Index (PRI) and age of disease onset ( $p = 0.126$ ), the number of attacks over the last year ( $p = 0.326$ ), and duration of the disease ( $p = 0.292$ ).

**Table 1: The frequency distribution, mean and standard deviation related to types of pain based on pain intensity (PRI) in patients with MS**

Types of pain	Number (Percent)				Mean and standard deviation
	None	Mild	Moderate	Severe	
Throbbing or Pulsating pain	102(88.7)	5(4.3)	7(6.1)	1(0.9)	0.19(2.3)
Shooting pain	95(82.6)	5(4.3)	6(5.2)	9(7.8)	0.38(0.9)
Stabbing pain	103(89.6)	5(4.3)	2(1.7)	5(4.3)	0.2(0.6)
Sharp pain	110(95.7)	1(0.9)	3(2.6)	1(0.9)	0.8(.4)
Cramping pain	54(47)	15(13)	25(21.7)	21(18.3)	1.1(1.9)
Gnawing pain	99(86.1)	2(1.7)	6(6.9)	6(5.2)	0.2(0.1)
Hot and Burning pain	101(87.8)	1(0.9)	4(3.5)	9(7.8)	0.3(0.2)
Aching and Excruciating pain	75(65.2)	4(3.5)	12(10.4)	24(20.9)	0.8(0.3)
Heavy and severe pain	101(87.8)	1(0.9)	4(3.5)	9(7.8)	0.3(0.2)
Tender and Touch sensitive pain	96(83.5)	2(1.7)	9(7.8)	8(7.0)	0.3(0.1)
Splitting and Tearing pain	108(93.9)	3(2.6)	2(1.7)	2(1.7)	0.1(0.2)
Tiring-Exhausting pain	83(72.7)	3(2.6)	18(15.7)	11(9.6)	0.6(0.2)
Sickening Pain	76(66.1)	10(8.7)	17(14.8)	12(10.4)	0.6(0.1)
Fearful pain	99(86.1)	3(2.6)	5(4.3)	8(7.0)	0.3(0.1)
Punishing- cruel or Killing pain	108(93.9)	3(2.6)	1(0.9)	3(2.6)	0.1(0.05)

## DISCUSSION

Pain has been influential on many aspects of life and people's behavior and studies indicate the effect of these behaviors on the severity of pain. According to several studies, continuous and constant pains gradually and negatively affect general and psychological health of the patients, their physical and social functions as well as their physical and psychological roles they have to play in life; furthermore, these pains reduce the level of well-being and quality of life. Therefore, due to the effect of pain on different aspects of life, many studies have been conducted to evaluate the severity of pain. In this regard, the results of the preset study showed that 57.7% of MS patients have experienced pain; however, there was no significant relationship between pain severity and individual characteristics and the disease. Results of the study by Charles (2007) in Canada also showed that 71 percent of MS patients experienced pain during the last 6 months. In addition, the results showed that there was no significant relationship between pain intensity and age, sex, employment status of the patients, duration of the disease and type of disease; however, there was a significant

relationship between education level and pain intensity, so that by increasing the levels education, less pain intensity has been reported(7). While the results of the study by Haghghat (2011) in Tehran showed that there was a positive correlation between the severity of pain in patients with MS and age ( $p < 0.01$ ), and with increasing patient age, severity of pain also increased<sup>9</sup>. The results of the study by Tree (2010) in Missouri showed that 59 percent of MS patients have experienced the pain and there was no significant relationship between pain intensity and age, sex and education<sup>13</sup>. It is worth mentioning since the prevalence of pain in this study has been reported 57.5%, perhaps one of the reasons for the different between the prevalence and severity of pain in patients with MS in this study and other studies is applying a different measurement scale to measure pain intensity; moreover, it can be due to ethnic and religious differences in understanding the pain and amount of pain from the patient's point of view. In addition, the study by Gandhi in England reported that 54% percent of patients suffered from pain. These patients significantly showed worse consequences compared to the second program of the World Health Organization ( $P < 0.05$ )(8). In his study

Gandhi states that pain of these patients has been reported more in the areas of the wrists, hands, back, hips, knees and feet. This researcher expressed that although the research team had observed more disability among patients experiencing pain, they did not observe any significant differences regarding the degrees of patients' ability to walk or balance. In the present study, 95% did not have the sharp pain. 33.9% mentioned pain associated with nausea from mild to severe, 21% reported moderate contusion pain and cramp pain, and 20.9% had severe excruciating pain. It seems that the way patient deals with the pain has a significant impact on accepting and coping with the pain. In this regard, Hirsch and his research team from the University of Washington in Seattle have investigated whether pain caused by psychological disorders in patients with MS differ from other patients. Therefore, they examined 129 MS patients with symptom of chronic pain to evaluate the acceptance and severity of pain. They showed that in patients with MS,

acceptance of pain, engaging in activities and pain relief have been significantly better in comparison with samples that suffered from chronic pain ( $P < 0.001$ ).

Therefore, it is necessary to conduct more studies for a better understanding of pain, its causes, and how to accept and cope with pain. These studies will help to identify this alarming and sometimes annoying phenomenon; and human can find ways to cope and encounter with it.

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