

False diagnosis in Multiple Sclerosis

Fariborz Khorvash¹, Peiman Asadi², Rasul Norouzi³,
Amir Hadi Maghzi⁴, Mehri Salari⁵, Ali Sonbolestan⁶, Gholamreza Askari⁷

ABSTRACT

Background and Objective: The main problem in approach to patients with multiple sclerosis (MS) is the extreme variability in their signs, symptoms, and the course of the disease. The aim of this study was to recognize the disorders that can be diagnosed wrongly instead of MS.

Methodology: In a one-year prospective study, in MS clinic of Alzahra hospital, Isfahan, Iran, patients with definite MS diagnosis were asked about the signs of other diagnoses which were made instead of MS, from the first presentations of their illness.

Results: Among the 310 patients who were included in the study, 30 patients (9.67%) were diagnosed wrongly before the definite diagnosis of multiple sclerosis. The majority of false diagnoses were made in patients with presentation of paresthesia (23.3%) and vertigo (20%).

Conclusion: Multiple Sclerosis may be neglected especially when patients present with non-specific complaints.

KEY WORDS: Multiple sclerosis, False diagnosis.

doi: [http://dx.doi.org/10.12669/pjms.291\(Suppl\).3544](http://dx.doi.org/10.12669/pjms.291(Suppl).3544)

How to cite this:

Khorvash F, Asadi P, Norouzi R, Maghzi AH, Salari M, Sonbolestan A, et al. False diagnosis in Multiple Sclerosis. *Pak J Med Sci* 2013;29(1) Suppl:409-411. doi: [http://dx.doi.org/10.12669/pjms.291\(Suppl\).3544](http://dx.doi.org/10.12669/pjms.291(Suppl).3544)

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The most common demyelinating disorder of the central nervous system is the multiple

sclerosis (MS).¹ It is also the most common cause of neurological disability among young adults.^{1,2} According to the conventional methods, the diagnosis of definite MS has been made by at least two episodes of neurologic attacks, disseminated in time and in a neuroanatomic site³ which in some cases, could lead to a delay in definite diagnosis. Today accurate diagnosis is extremely essential because of available disease modifying therapy, which may prevent the disease progression.⁴⁻⁶ There is no separate laboratory or influential test, which is pathognomonic for MS⁴, and there are many disorders that can mimic it.¹ The main difficulty in approach to patients suspicious to have MS is the excessive variability in signs and symptoms of the disease.^{7,8} This may lead to misdiagnosis, redundant medical appointment, and giving misinformation to the patients.⁹⁻¹¹ The rate of misdiagnosis is about 5%, representing that 1 in 20 patients were diagnosed to have MS, in fact had another condition similar to MS.⁴ Another mistake is false diagnosis (other diagnoses instead of the MS) and there is not enough studies in this regard. The incidence of MS in our province is increasing,¹² and a plan of correct diagnosis should be a target of studies.

1. Fariborz Khorvash, MD, Assistant Professor, Isfahan Neuroscience Research Center, Department of Neurology,
2. Peiman Asadi, MD, Assistant Professor, Department of Neurology, University of AJA, Tehran, Iran.
3. Rasul Norouzi, MD, Neurology Assistant, Isfahan Neurosciences Research Center, Department of Neurology,
4. Amir Hadi Maghzi, MD, Department of Neurology, University of California, San Francisco, USA.
5. Mehri Salari, MD, Neurology Assistant, Department of Neurology,
6. Ali Sonbolestan, Ophthalmology Assistant,
7. Gholamreza Askari, MD, PhD, Assistant Professor of Clinical Nutrition, Food Security Research Center,
- 1,3,5-7: Isfahan University of Medical Sciences, Isfahan, Iran.

Correspondence:

Gholamreza Askari, MD, PhD,
Assistant Professor of Clinical Nutrition,
Food Security Research Center,
Isfahan University of Medical Sciences,
Isfahan, Iran.
E-mail: askari@mui.ac.ir

Table-I: The first presentation and the wrong diagnosis of patients.

<i>No. of patients with wrong diagnosis</i>	<i>The first presentation</i>	<i>The wrong diagnosis</i>
7	Paresthesia	Depression/ Anxiety
6	Vertigo	Vestibular neuronitis
5	Facial deviation	Bell's palsy
4	Upper limb paresis	Brachial plexus neuropathy/ ulnar neuropathy
3	Lower limb paresis	Proneal neuropathy
2	Visual problems	Migraine
2	Limb paresthesia in Diabetic patient	Neuropathy
1	Short time weakness in Right hand	hysteria

The aim of this study was to recognize the disorders that can be diagnosed wrongly instead of MS and to determine their sequence and prevalence.

METHODOLOGY

In a one-year prospective study, a group of 310 consecutive patients with definite MS who referred to MS clinic of Alzahra Hospital, Isfahan, Iran, between December 2009 and December 2010, were included in the study. Diagnosis of definite MS was based on the McDonald criteria 2005.¹³ After signing the informed consent, they were asked about the different diagnosis which was made from their first episode of symptoms, degree of physician who made the false diagnosis, and also course of the disease and demographic features of patients. Collected data were analyzed and the results are shown as mean \pm SD. The Ethics Committee of Isfahan University of Medical Sciences approved the study protocol.

RESULTS

Among 310 patients who were included to the study, 236 were women and 74 men. The mean age of patients was 34.79 ± 7.42 years. The first symptom of MS was presented at the mean age of 29.84 ± 5.63 years. Among all of these patients, 30 cases (9.67%) had been diagnosed wrongly after the first presentation of their signs and symptoms (70% were woman); these patients were diagnosed 1.5 years after the onset of symptoms. The majority of the false diagnoses were made in patients with presentation of paresthesia (23.3%) and vertigo (20%), and most of them were made by the general practitioner (33.3%) and neurologist (26.7%). The first presentation and the wrong diagnosis are summarized in Table-I. The first referral physician is summarized in Table-II.

DISCUSSION

In this study, a group of multiple sclerosis patients were asked about their first symptom and diagnosis. Among all of the 310 patients who were referred to us, 30 persons (9.67%) reported history of a wrong diagnosis before definite MS diagnosis. According to other studies, many conditions can imitate MS signs and symptoms^{14,15} and so can be misdiagnosed as MS. The rate of misdiagnosis is about 5%, representing that 1 in 20 patients were diagnosed falsely at first.⁴ Conversely, many patients may be falsely diagnosed as other disorders though their main problem is MS. In one study of fifty MS patients by Levin et al. 58% of patients reported wrong diagnosis before definite confirmation of MS. They concluded that MS is often overlooked when patients present with non-specific sensory complaints.¹⁶

In another study by Rolak et al. psychiatric diseases were mistaken for multiple sclerosis more often than any other conditions.¹⁷ Today accurate diagnosis is extremely essential with available disease modifying therapy, which may possibly prevent the progression of the disease^{4,5} and despite well defined clinical criteria, confirmation of multiple sclerosis is not easy yet. The cause of this difficulty may be a lack of mature knowledge of

Table-II: First physician who made the wrong diagnosis.

<i>No. of patients with wrong diagnosis</i>	<i>Percentage (%)</i>	<i>Physician</i>
10	33.33	General practitioner
8	26.66	Neurologist
6	20.00	Orthopedist
4	13.33	Otolaryngologist
2	6.66	Internist

MS or non-specific symptoms that do not relate to a specific neurologic condition.

This study showed that MS may be neglected when patients present with non-specific complaints. This false diagnosis may lead to many redundant medical appointments, unnecessary treatments and delay in appropriate treatment. The most of the false diagnosis were made by general practitioners and neurologists, but it can be a natural occurrence, because most patients with sign and symptom of MS are directed to the general practitioner, who are the first line of health system and then to the neurologists. Hence, it is justified to plan a continuous education programme regarding the presentation of MS and its differential diagnosis, especially for the neurologist and general practitioner, so we can reduce this false and misdiagnosis for multiple sclerosis.

Conflict of interest: All authors declare that they have no conflict of interest.

REFERENCES

1. Fadil H, Kelley RE, Gonzalez-Toledo E. Differential diagnosis of multiple sclerosis. *Int Rev Neurobiol*. 2007;79:393-422.
2. O'Hara L, Cadbury H, DeSouza L, Ide L. Physical rehabilitation has a positive effect on disability in multiple sclerosis patients. *Neurology*. 2000;54(6):1396-1397.
3. Confavreux C, Aimard G, Devic M. Course and prognosis of multiple sclerosis assessed by the computerized data processing of 349 patients. *Brain*. 1980;103(2):281-300.
4. Gasperini C. Differential diagnosis in multiple sclerosis. *Neurol Sci*. 2001;22(8):93-97.
5. Trojano M, Paolicelli D. The differential diagnosis of multiple sclerosis: classification and clinical features of relapsing and progressive neurological syndromes. *Neurol Sci*. 2001;22(8):98-102.
6. Etemadifar M, Kazemi M, Chitsaz A, Hekmatnia A, Tayari N, Ghazavi A, et al. Mycophenolate mofetil in combination with interferon beta-1a in the treatment of relapsing-remitting multiple sclerosis: a preliminary study. *J Res Med Sci*. 2011;16(1):1-5.
7. Miller A. Diagnosis of multiple sclerosis. *Semin Neurol*. 1998;18(3):309-316.
8. Shaygannejad V, Golabchi KH, Dehghani A, Ashtari F, Haghighi S, Mirzendehtdel M, et al. Color blindness among multiple sclerosis patients in Isfahan. *J Res Med Sci*. 2012;17(3):254-257.
9. Nelson RF. Ethical issues in multiple sclerosis. *Semin Neurol*. 1997;17(3):227-234.
10. Achiron A, Barak Y. Multiple Sclerosis--From Probable to Definite Diagnosis: A 7-Year Prospective Study. *Arch Neurol*. 2000;57(7):974-979.
11. Poser CM, Brinar VV. Diagnostic criteria for multiple sclerosis. *Clin Neurol Neurosurg*. 2001;103(1):1-11.
12. Etemadifar M, Abtahi SH. Multiple sclerosis in Isfahan, Iran: Past, present and future. *Int J Prev Med*. 2012;3:301-302.
13. Polman CH, Reingold SC, Edan G, Filippi M, Hartung HP, Kappos L, et al. Diagnostic criteria for multiple sclerosis: 2005 revisions to the "McDonald Criteria". *Ann Neurol*. 2005;58:840-846.
14. Ratchford JN, Calabresi PA. The diagnosis of MS: White spots and red flags. *Neurology*. 2008;70(13):1071-1072.
15. Najafi MR, Shaygannejad V, Mirpourian M, Gholamrezaei A. Vitamin B12 deficiency and multiple sclerosis; Is there any association? *Int J Prev Med*. 2012;4:286-289.
16. Levin N, Mor M, Ben-Hur T. Patterns of misdiagnosis of multiple sclerosis. *Isr Med Assoc J*. 2003;5(7):489-490.
17. Rolak LA, Fleming JO. The differential diagnosis of multiple sclerosis. *Neurologist*. 2007;13(2):57-72.

Authors contribution:

Fariborz Khorvash: Manuscript writing.

Peiman Asadi and Rasul Norouzi: Data Collection.

Amir Hadi Maghzi and Mehri Salari: Statistical analysis.

Ali Sonbolistan: Proposal writing.

Gholamreza Askari: Managing the research project.