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# DEMOGRAPHIC, CLINICAL AND PARACLINICAL CHARACTERISTICS OF MULTIPLE SCLEROSIS MIMICS AMONG A SAMPLE OF EGYPTIAN PATIENTS

By

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## ABSTRACT

**Background:** Multiple sclerosis (MS) is a chronic autoimmune disease which is the main cause of non-traumatic disability among young and middle-aged adults. The diagnosis of MS is not often feasible, whereas many disorders are mimicking MS.

**Objective:** retrieving the difference in demographics, clinical, and paraclinical characteristics of MS mimics in order to ensure early diagnosis and adequate treatment of such patients.

**Patients and Methods:** All patients with clinically suspected MS and aged 18-60 years old were included in the current study from the MS unit of Neurology Department, Al-Azhar University Hospitals, during the period from May, 2017 to April, 2019. Those patients were furtherly assorted based on Mcdonald's Criteria 2017 and paraclinical assessment into two groups; patients who had confirmed MS and those with MS mimics.

**Results:** In the present study, 515 patients with a suspected diagnosis of multiple sclerosis were enrolled. There were 400 (77.6 %) patients diagnosed as MS, while 115 (22.4%) patients were not fulfilling such criteria and considered MS mimics.

After reaching a final diagnosis, our cases distributed as follows: Thirty cases (26.1) migraine, twelve cases (10.4%) radiological isolated syndrome, eleven cases (9.6%) small vessel disease, ten cases (8.7%) psychogenic, eight cases (7%) neuromyelitis optica, five cases (4.3%) systemic lupus erythematosus, five cases (4.3%) Behcet's disease, five cases (4.3%) anterior ischemic optic neuropathy, four cases (3.5%) antiphospholipid syndrome, and four cases (3.5%) transverse myelitis.

**Conclusion:** Patients with a suspected diagnosis of MS should be subjected to meticulous neurological assessment coupled with MRI and the appropriate laboratory investigations to reach the definite diagnosis .

**Keywords:** Multiple sclerosis, Mimics, clinical, paraclinical.

## INTRODUCTION

Multiple sclerosis (MS) is a chronic autoimmune disease which is the main cause of non-traumatic disability among young and middle-aged adults *(Rowitch et al., 2019)*. In particular, MS often affected young white women aged 20- 40 years old. On the contrary, MS might affect

patients aged less than 8 years and those aged more than 50 years with a percentage of 5 and 9%, respectively *(Osborn et al., 2013)*. The estimated prevalence of MS is less than 60 per 100.000 populations in North Africa and the Middle East *(Wallin et al., 2019)*. In Egypt, the estimated burden of MS is 13.74/100,000 population *(El Tallawy et al., 2013)*.

The advancement in the diagnostic tools and the availability of subsidiary investigations likewise magnetic resonant imaging (MRI), electrophysiological studies, cerebrospinal fluid analysis, and optical coherence tomography enhanced noticeably the feasibility of the diagnosis of MS *(Costello, 2011)*. However, MS remains often a disease of a clinical diagnosis based mainly on the McDonald criteria *(Alroughani et al., 2012)*. Despite being widely applied, nearly 35% patients are misdiagnosed as MS. Those patients lost the opportunity to receive the timely adequate therapy which is extremely pivotal in the reduction of disease progression *(Osborn et al., 2013)*.

Of note, the diagnosis of MS is not often feasible, whereas many disorders are mimicking MS. The proper detection of these diseases is deeply crucial in order to avoid the administration of costly and risky inappropriate therapy, which in turn may have multiple repercussions in the progression of the original disease. Subsequent to that, knowing MS mimics is important to commence the appropriate therapy for such conditions *(Sand, 2015)*.

Approximately 100 neurological diseases have been recognized as mimics of MS, and definitely others are yet to be recognized *(Toledano et al., 2015)*. These conditions encompassed autoimmune, inflammatory, infectious, vascular, metabolic, neoplastic, neurodegenerative, mitochondrial, and mechanical diseases along with distinct ophthalmic and miscellaneous disorders. In this respect, psychiatric illness might be also presented as a mirror of relapsing-remitting MS *(Karussis, 2014)*. Throughout literature search, there was a limited number of studies which discussed MS mimics, principally among the Egyptian population *(Hashem et al., 2010*; *Zakaria et al., 2016* and *Ali et al., 2018)*. To shed light on this issue, the present study was implemented to retrieve the difference in demographics, clinical, and paraclinical characteristics of MS mimics in order to ensure early diagnosis and adequate treatment of such patients.

## SUBJECTS AND METHODS

### Ethical approval:

The current investigation was executed based on the recommendations of the ethical committee, Faculty of Medicine, Al-Azhar University, Cairo, Egypt. All clinical interventions were illustrated obviously to all participants prior to study processing. Possible adverse events were exemplified, whereas, a written informed consent after a clear explanation of all study steps was obtained.

### Study design:

This was cross-sectional study which was carried out at the MS units of Al-Azhar Neurology Department at Al-Azhar University Hospitals (Al Hussein and Bab Al-sharia) during the period from May, 2017 to April, 2019 .

**Inclusion and exclusion criteria:**

All patients with clinically suspected MS and aged 18-60 years old were included in the current study. Those patients were furtherly assorted based on Mcdonald's Criteria 2017 *(Thompson et al., 2018)* and paraclinical assessment into two groups; patients who had confirmed MS and those with MS mimics. Patients with an established diagnosis of MS prior to study conduction were omitted.

**Clinical assessment:**

All patients were subjected to rigorous history taking comprised age, sex, duration of the disease, presenting symptom, family history of neurological or psychiatric illness. Clinical evaluation was done which included general and local examination to reveal the clinical evidence of motor weakness, sensory loss, visual impairment, hearing loss, and systemic manifestation.

**Para-clinical assessment**

1. **Laboratory assessment**: Patients were subordinated to the following investigations; renal and liver functions, C-Reactive protein, Vitamin B-12, folate, thyroid functions, lipid profile, viral markers, electrolytes level, and anti-nuclear antibody level (ANA). In the case of positive ANA, antiphospholipid antibodies, and anti-double strands DNA were done.

**Imaging:** All patients were radiologically evaluated using MRI on brain and spine using 1.5 Tesla scanner and when needed intravenous contrast (Gadolinium) has been used to highlight the lesions. This test can illustrate the nature and the distribution of the lesions for differential diagnosis.

**MRI Brain:**

- Axial T1 weighted image without contrast (and post contrast when needed).
- Axial T2 Weighted image.
- Axial FLAIR sequence for lesion detection and lesion load estimation.
- Sagittal FLAIR sequence for better evaluation of lesion location in reference to the lateral ventricle.
- Axial Double inversion recovery for detection of cortical lesions.

**MRI Spine:**

- Sagittal T1 without contrast (and post contrast when needed).
- Sagittal T2 weighted image.
- Axial T2 weighted image.
- Sagittal STIR/ proton density for better lesion visualization.

Chest X-ray was done in case of suspicion of chronic latent infectious lung disease and hilar lymphadenopathy. Similarly, Echocardiography was done in case of suspicion of systemic lupus erythematosus .

2. **CSF Analysis:** Under completely aseptic conditions, lumber puncture had been examined, whereby CSF basic chemical analysis was done to retrieve the levels of glucose, albumin, protein, lactate, and IgG. Subsequently, microbial analysis was performed to reveal the cell count and other microbial test. Eventually, cytopathological evaluation and tests

for intrathecal immunoglobulins G (IgG index and oligoclonal band (OCB) analysis).

3. **Neurophysiological studies:** For patients with visual affection, visual evoked potentials and optic coherence Tomography were performed. Besides that, brainstem auditory and somatosensory evoked potentials were executed as needed.
4. **Other investigations:** In case of Sj?gren's disease, and salivary gland syntigraphy suspicion, Schirmer test was performed. Subsequently, if there is suspicion of vasculitis, wider autoantibody panel, 24-hour urine analysis, glomerular filtration rate evaluation was implemented. For rheumatological disorders, anti CCP, serum complement levels was performed.

To detect lymphoma, serum anti beta2 microglobulins was done, whereas blood and CSF ACE levels were evaluated in case of sarcoidosis suspicion. Eventually, for neuromyelitis optica (NMO), antiaquaporin 4 and anti-MOG tests were executed.

**Statistical Analysis:**

Disease categories, MRI and lab findings were classified and expressed as categorical variables using the number and percentage. Statistical analysis was executed using SPSS software version 23 for Windows (SPSS Inc., Chicago, IL, USA).

## RESULTS

**Patients demographic characteristics:**

In the present study, 515 patients with a suspected diagnosis of multiple sclerosis were enrolled. There were 400 (77.7 %) patients diagnosed as MS, while 115 (22.3%) patients were not fulfilling such criteria and considered MS mimics **(Figure 1)**.

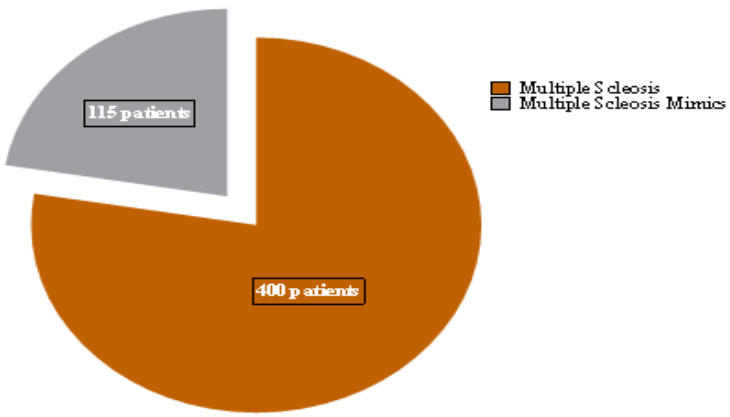


**Figure (1): Distribution of cases among the studied groups**

Regarding the source of referral of all cases attending MS clinic, there were 243 cases (47.2 %) seen at outpatient appointment or following up, 143 cases (27.8 %) admitted to the neurology ward while 129 cases (25 %) were referred from other specialities (mainly ophthalmology and internal medicine departments). Having MS mimics group, there was 75 females (65.2%) and 40 males (34.8%) with a mean age of 35.3 ± 10.4 years. The duration of illness among cases varied widely, being as short as one week in some cases, with the longest duration recorded as 10 years with an average of 16.1 months for all cases.

The cases included in this study were suspected to have multiple sclerosis according to either clinical presentation in 23 cases (20%), imaging findings in 60 cases (52.2%) findings or both 32 cases (27.8%).

Regarding the presenting symptoms of the studied group, polysymptomatic presentation was the commonest type in 53 cases being (46.1%), followed by headache (migraine) in 30 cases (26.1%), and visual symptoms in 12 cases (10.4%) **(Table 1)**.

**Table (1): Presenting symptoms among patients of the studied group**

| | No. | % |
|---|---|---|
| Polysymptomatic | 53 | 46.1% |
| Headache | 30 | 26.1% |
| Visual | 12 | 10.4% |
| Accidental | 9 | 7.8% |
| Motor | 5 | 4.3% |
| Sensory | 3 | 2.6% |
| Psychiatric | 2 | 1.7% |
| Seizures | 1 | 0.9% |

As regard to the presence of systemic manifestations, it was presented in 27 cases (23.5%) including fever, skin lesions, joint affection, chest involvement, oro-genital ulcerations, and abortions. It was present in all cases diagnosed as rheumatoid arthritis (RA), SLE, antiphospholipid syndrome, sarcoidosis, Behcet's disease, and Sjogren's syndrome.

**The MRI findings:** In the present study, MRI (either brain or spine) were normal in 17 cases (14.8%) while 98 cases (85.2%) had abnormal findings. In details, all cases diagnosed as acute disseminated encephalomyelitis (ADEM), Antiphospholipid syndrome, Behcet's disease, cerebral autosomal-dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL), Migraine (cases referred because of imaging findings), Moyamoya, rheumatoid arthritis, RIS, sarcoidosis, Sjogren's syndrome, systemic lupus erthymatosus (SLE), Lymphoma, spinal AV fistula( SVD) transverse myelitis or vitamin B deficiency have findings in imaging either brain, spinal cord or both. All cases diagnosed as fibromyalgia or chorioretenitis had normal imaging.

In the five cases diagnosed as anterior ischemic optic neuropathy (AION), three of them (60%) had findings in MRI brain (going with ischemia), while two patients (40%) had normal MRI. In the ten cases diagnosed as psychogenic, two of them (20%) had findings in MRI brain in the form of large perivascular spaces (Virchow-Robin spaces), while eight patients (80%) had normal MRI. In the eight cases diagnosed as NMO, seven of

them (87.5%) had findings in MRI brain or spine or both, while one patient (12.5 %) had normal MRI (presented by recurrent optic neuritis) **(Table 2)**.

**Table (2): Imaging findings among cases in relation to final diagnosis**

| Parameters \ Diagnosis | Negative | | Positive | |
|---|---|---|---|---|
| | N | % | N | % |
| ADEM | 0 | 0.0% | 3 | 100.0% |
| AION | 2 | 40.0% | 3 | 60.0% |
| Antiphospholipid AB syndrome | 0 | 0.0% | 4 | 100.0% |
| Behcet | 0 | 0.0% | 5 | 100.0% |
| CADASIL | 0 | 0.0% | 3 | 100.0% |
| Chorioretenitis | 2 | 100.0% | 0 | 0.0% |
| Fibromyalgia | 3 | 100.0% | 0 | 0.0% |
| Migraine | 0 | 0.0% | 30 | 100.0% |
| Moyamoya | 0 | 0.0% | 1 | 100.0% |
| NMO | 1 | 12.5% | 7 | 87.5% |
| Psychogenic | 8 | 80.0% | 2 | 20.0% |
| RA | 0 | 0.0% | 2 | 100.0% |
| RIS | 0 | 0.0% | 12 | 100.0% |
| Sarcoidosis | 0 | 0.0% | 3 | 100.0% |
| Sjogren | 0 | 0.0% | 1 | 100.0% |
| SLE | 0 | 0.0% | 5 | 100.0% |
| SOL (Lymphoma) | 0 | 0.0% | 1 | 100.0% |
| Spinal AV fistula | 0 | 0.0% | 1 | 100.0% |
| SVD | 0 | 0.0% | 11 | 100.0% |
| TM | 0 | 0.0% | 4 | 100.0% |
| Vit B deficiency | 0 | 0.0% | 1 | 100.0% |

ADEM= Acute disseminated encephalomyelitis, AION= anterior ischemic optic neuropathy, CADASIL= cerebral autosomal-dominant arteriopathy with subcortical infarcts and leukoencephalopathy, NMO=Neuromyelitis optics, RA=Rheumatoid arthritis, SLE=Systemic lupus erythematosus, SVD=Spinal A-V fistula, RIS= radiological isolated syndrome, TM= Transverse myelitis

Regarding the sites of lesions in imaging in which it presented in brain or spinal cord or both, 80 cases (69.6%) had brain lesions, 7 cases (6.1%) had spinal cord lesions, 11 cases (9.6%) had brain and spinal cord lesions while 17 cases (14.8%) had normal imaging. According to sites of lesions in our cases in relation to final diagnosis, we found that brain lesions were present in all cases diagnosed as antiphospholipid syndrome, CADASIL, migraine, moyamoya, lymphoma, rheumatoid arthritis, RIS, sarcoidosis, Sjogren's disease, and SVD, in addition to 80% of cases diagnosed as Behcet's disease and SLE. Also, in 60% of AION cases and 33.3% of ADEM cases without cord affection.

Spinal cord lesions were present without brain affection in all cases diagnosed as spinal AV fistula, transverse myelitis, and Vitamin B deficiency. Also, in 12.5 % of cases of NMO. In addition, both brain and spinal cord lesions were present in cases diagnosed as ADEM (66.7%), NMO (75%) and SLE (20%) **(Table 3)**.

**Table (3): Sites of lesions in Imaging in relation to final diagnosis among cases**

| findings in brain or spinal cord or both / Diagnosis | No | | Brain | | Spinal cord | | Both | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| ADEM | 0 | 0.0% | 1 | 33.3% | 0 | 0.0% | 2 | 66.7% |
| AION | 2 | 40.0% | 3 | 60.0% | 0 | 0.0% | 0 | 0.0% |
| Antiphospholipid AB syndrome | 0 | 0.0% | 4 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| Behcet | 0 | 0.0% | 4 | 80.0% | 0 | 0.0% | 1 | 20.0% |
| CADASIL | 0 | 0.0% | 3 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| Chorioretenitis | 2 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Fibromyalgia | 3 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Migraine | 0 | 0.0% | 30 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| Moyamoya | 0 | 0.0% | 1 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| NMO | 1 | 12.5% | 0 | 0.0% | 1 | 12.5% | 6 | 75.0% |
| Psychogenic | 8 | 80.0% | 2 | 20.0% | 0 | 0.0% | 0 | 0.0% |
| RA | 0 | 0.0% | 2 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| RIS | 0 | 0.0% | 12 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| Sarcoidosis | 0 | 0.0% | 3 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| Sjogren | 0 | 0.0% | 1 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| SLE | 0 | 0.0% | 4 | 80.0% | 0 | 0.0% | 1 | 20.0% |
| SOL (Lymphoma) | 0 | 0.0% | 1 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| Spinal AV fistula | 0 | 0.0% | 0 | 0.0% | 1 | 100.0% | 0 | 0.0% |
| SVD | 0 | 0.0% | 11 | 100.0% | 0 | 0.0% | 0 | 0.0% |
| TM | 0 | 0.0% | 0 | 0.0% | 4 | 100.0% | 0 | 0.0% |
| Vit B deficiency | 0 | 0.0% | 0 | 0.0% | 1 | 100.0% | 0 | 0.0% |

ADEM= Acute disseminated encephalomyelitis, AION= anterior ischemic optic neuropathy, CADASIL= cerebral autosomal-dominant arteriopathy with subcortical infarcts and leukoencephalopathy, NMO=Neuromyelitis optics, RA=Rheumatoid arthritis, SLE=Systemic lupus erythematosus, SVD=Spinal A-V fistula, RIS= radiological isolated syndrome, TM= Transverse myelitis

Spinal cord affection either alone or associated with brain affection was present in 17 cases (14.7%) of all cases being in cases diagnosed as NMO spinal AV fistula, ADEM, transverse myelitis, SLE and Vitamin B deficiency **(Table 4)**.

**Table (4): Spinal cord affection among cases in relation to diagnosis**

| **Affection / Diagnosis** | **No** | **%** |
|---|---|---|
| **NMO** | **8** | **100%** |
| **ADEM** | **2** | **66.7%** |
| **Transverse myelitis** | **4** | **100%** |
| **Spinal AV fistula** | **1** | **100%** |
| **SLE** | **1** | **20%** |
| **Vitamin B deficiency** | **1** | **100%** |

**The findings of CSF analysis:** Regarding to CSF analysis (according to the presence of oligoclonal bands or not), it was done in 34 cases (29.4%) and turned out to be normal except for two cases. The first diagnosed as ADEM that showed two OCBs in CSF that not present in the serum; and the second diagnosed as Behcet's disease in which CSF showed only one OCB also not present in the serum.

After reaching a final diagnosis, our cases distributed as follows; thirty cases (26.1) migraine, twelve cases (10.4%) RIS, eleven cases (9.6%) small vessel disease, ten cases (8.7%) psychogenic, eight cases (7%) NMO, five cases (4.3%) SLE, five cases (4.3%) Behcet's disease, five cases (4.3%) anterior ischemic optic neuropathy, four cases (3.5%) antiphospholipid syndrome, four cases (3.5%) transverse myelitis, three cases (2.6%) ADEM, three cases (2.6%) CADASIL, three cases (2.6%) fibromyalgia, three cases (2.6%) sarcoidosis, two cases (1.7%) rheumatoid arthritis, two cases (1.7%) chorioretinitis and one case (0.9%) diagnosed as Sjogren's disease, lymphoma, spinal AV fistula, moyamoya disease and Vitamin B deficiency **(Table 5)**.

**Table (5): Final diagnosis of patients of the studied group**

| Cases / Diagnosis | Number | % |
|---|---|---|
| ADEM | 3 | 2.6% |
| AION | 5 | 4.3% |
| Antiphospholipid AB syndrome | 4 | 3.5% |
| Behcet | 5 | 4.3% |
| CADASIL | 3 | 2.6% |
| Chorioretenitis | 2 | 1.7% |
| Fibromyalgia | 3 | 2.6% |
| Migraine | 30 | 26.1% |
| Moyamoya | 1 | 0.9% |
| NMO | 8 | 7.0% |
| Psychogenic | 10 | 8.7% |
| RA | 2 | 1.7% |
| RIS | 12 | 10.4% |
| Sarcoidosis | 3 | 2.6% |
| Sjogren | 1 | 0.9% |
| SLE | 5 | 4.3% |
| SOL (Lymphoma) | 1 | 0.9% |
| Spinal AVM | 1 | 0.9% |
| SVD | 11 | 9.6% |
| TM | 4 | 3.5% |
| Vit B deficiency | 1 | 0.9% |

ADEM= Acute disseminated encephalomyelitis, AION= anterior ischemic optic neuropathy, CADASIL= cerebral autosomal-dominant arteriopathy with subcortical infarcts and leukoencephalopathy, NMO=Neuromyelitis optics, RA=Rheumatoid arthritis, SLE=Systemic lupus erythematosus, SVD=Spinal A-V fistula, RIS= radiological isolated syndrome, TM= Transverse myelitis

## DISCUSSION

MS is deemed to be the most prevalent cause of neurological morbidity owed to its ability to alter a considerable range of systems functions to the extent that leads to a myriad of neurological manifestations and comorbidities *(Jewells et al., 2015)*. Despite being diagnosed mainly based on McDonald criteria, the misconception of clinical and laboratory results along with the misinterpretation of the MRI findings, which is the most common cause of misdiagnosis of MS, lead to. Misdiagnosis of many neurological disorders *(Singhal and Berger, 2012)*.

In our study, 115 (22.4%) patients were misdiagnosed as MS. Of them, 23 (20%) patients were diagnosed as MS based on the clinical suspicion, whereas 60 (52.2%) patients were diagnosed as MS based on imaging suspicion. In compliance with our results.

Abundant variants of CNS demyelinating syndromes have been recognized in order to enhance the diagnostic accuracy and to adjust the appropriate treatment *(Karussis, 2014)*. The definitive diagnosis has an important implication on the treatment of such conditions. For example, neuro demyelinating diseases such as NMO, whereby anti-aquaporin antibodies considered to be involved if misdiagnosed as MS shall not only respond but even deterioration of the disease might occur *(Siva, 2018)*.

In our study, the most MS mimics were migraine, RIS, SVD, and NMO. These conditions contributed to nearly 62% of MS mimics. In accordance with our results, *Solomon et al. (2012)* notified that the common disorders that mimic MS were migraine, small vessel cerebrovascular disease, and functional neurological disorder. Of note, the development of MS mimics might be attributed to many factors encompassed misinterpretation of the clinical findings whereas the manifestations of the disease not compatible with demyelination features and the inadequate employment of the MRI criteria *(Solomon and Weinshenker, 2013)*. Thereafter, strict application of McDonald criteria should be implemented by expert neurologists, principally those familiar with MS.

In our study, 29 (96.7%) patients with a final diagnosis of migraine had supratentorial lesion based on MRI findings. *Absinta et al. (2012)* revealed that incidental periventricular lesions might be found in healthy people and patients with migraine. To differentiate between MS and migraine, the presence of cortical grey matter lesion is suggesting MS, whereas these lesions did not be found in migraine and NMO. Subsequent to that, the presence of central vein sign differentiates MS from a wide range of diseases such as migraine, small vessel diseases, and NMO *(Sinnecker et al., 2012)*.

Regarding the paraclinical investigations, MRI is the most pivotal diagnostic tool with reported sensitivity up to 90% *(Thompson et al., 2018)*. On the contrary, its high negative predictive value, which reached nearly 66%, with a high false positive diagnostic inaccuracy consisted other neurological disorders likewise NMO, vasculitis, and even healthy people *(?merhoca et al., 2018)*. These findings bring to light that *McDonald criteria (2010)* should be subjected to further improvements. In 2017, these criteria were furtherly modified whereby the diagnosis of MS was established based on the presence of dissemination in space and CSF-specific OCB in the absence of dissemination of time by MRI.

Noteworthy, CSF analysis is the most reliable diagnostic tool in differentiating non-infectious and infectious inflammatory disorders of the CNS. Besides that, the evident pathological changes by CSF can deeply pivotal in the diagnosis of patients with atypical MRI

lesions *(Huang et al., 2017)*. Among MS patients, OCBs are found in nearly 90% of the patients. However, they may be positive in patients with other neuroinflammatory disorders such as NMO; thereafter, the presences of OCBs must be interpreted precisely *(Balci et al., 2018)*.

The diagnosis of MS and its differential diagnosis could still be challenging. However, the prospective advancement in the new pathological, immunological, imaging, clinical, and therapeutic methods is deemed to enhance the accuracy of the diagnosis of such conditions.

## CONCLUSION

Patients with a suspected diagnosis of MS should be subjected to meticulous neurological assessment coupled with MRI and the appropriate laboratory investigations to reach the definite diagnosis.

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# الخصائص الديموجرافية والإكلينيكية والإكلينيكية المساعدة للحالات المشابهة لمرض التصلب المتعدد في عينة من المرضى المصريين

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**خلفيـــة البحـــث:** مـــرض التصـــلب العصـــبي المتعـــدد هـــو مـــرض منـــاعي مـــزمن والـــذي هـــو الســـبب الرئيســـي للإعاقـــة الغيـــر ناتجـــة عـــن الاصـــابات بـــين الشـــباب والكبـــار فـــي منتصـــف العمـــر. تشـــخيص مـــرض التصـــلب العصـــبي يتميـــز بالصـــعوبة فـــي كثيـــراً مـــن الأحيـــان، فـــي حـــين أن العديـــد مـــن الاضـــطرابات العصـــبية والنفســـية تحـــاكي مـــرض التصلب العصبي المتعدد.

**الغـــرض مـــن البحـــث:** توضـــيح الفـــرق فـــي الخصـــائص الديموغرافيـــة والســـريرية والإكلينيكيـــة المســـاعدة للأمـــراض التـــي تشـــبه فـــي أعراضـــها وتشخيصـــها مـــرض التصـــلب العصـــبي المتعـــدد مـــن أجـــل ضـــمان التشـــخيص المبكـــر والعـــلاج المناســـب لهؤلاء المرضى.

**المرضـــى وطـــرق البحـــث:** تـــم تضـــمين جميـــع المرضـــى مـــن وحـــدة التصـــلب العصـــبي المتعـــدد بقســـم الأمـــراض العصـــبية بمستشـــفيات جامعـــة الأزهـــر الـــذين يعـــانون مـــن مـــرض التصـــلب العصـــبي المتعـــدد المشـــتبه ســـريريا والـــذين تتـــراوح أعمـــارهم بـــين 18-60 ســـنة فـــي الدراســـة الحاليـــة. تـــم تقســـيم هـــؤلاء المرضـــى بشـــكل إضـــافي اســـتنادًا إلـــى معـــايير ماكدونالـــدز 2017 والتقيـــيم المنهجـــي إلـــى مجمـــوعتين؛ المرضـــى الـــذين تأكـــد تشخيصـــه بمـــرض التصـــلب العصـــبي المتعـــدد والمرضـــى الـــذين يشـــتبه فـــي تشخيصـــهم مرض التصلب العصبي المتعدد.

**النتـــائج:** تـــم تســـجيل 515 مريضـــا مـــع اشـــتباه مـــرض التصـــلب المتعـــدد. كـــان هنـــاك 400 (77.6 ٪) مـــن المرضـــى الـــذين تـــم تشخيصـــهم علـــى أنهـــم مـــرض التصـــلب

العصبي المتعدد، في حين أن 115 (22.4 ٪) من المرضى لم يستوفوا هذه المعايير واعتبروا مشتبهين بمرض التصلب العصبي المتعدد.

وبعد الوصول إلى التشخيص النهائي، تم توزيع تلك الحالات على النحو التالي؛ ثلاثين حالة (26.1) صداع نصفي، اثنتي عشرة حالة (10.4٪) متلازمة منعزلة إشعاعياً، 11 حالة (9.6٪) اضطراب الأوعية الدموية الصغيرة ،ثماني حالات (7٪) التهاب العصب البصري والنخاع الشوكي ، خمس حالات (4.3٪) ذئبة حمراء ، خمس حالات (4.3 ٪) مرض بهجت ، خمس حالات (4.3 ٪) اعتلال عصبي بصري إقفاري أمامي ، أربع حالات (3.5 ٪) متلازمة الفوسفوليبيد ، وأربع حالات (3.5 ٪) التهاب النخاع المستعرض.

**الاستنتاج:** يجب إخضاع المرضى الذين يشتبه في إصاباتهم بمرض التصلب العصبي المتعدد لتقييم عصبي دقيق مقرونا بالرنين المغناطيسي والفحوصات المختبرية المناسبة للوصول إلى التشخيص المحدد.