Demographic and clinical profile of multiple sclerosis in Qena governorate, Egypt

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Abstract

Background: Multiple sclerosis (MS) MS is a demyelinating and neurodegenerative inflammatory disorder of the brain and the spinal cord that is one of the most frequent neurological disorders at a young age. Several MS centers have established MS registries to estimate the prevalence of the disease in the general community and to investigate the clinical characteristics of MS patients.

Objectives: Determining the demographic and clinical patients with MS referred to Qena University Hospital.

Patients and methods: In a descriptive cross-sectional study on thirty patients clinically diagnosed to have MS according to 2017 McDonald criteria were included. They were diagnosed in the neuropsychiatry department from November 2018 to April 2020.

Results: There were 17 (56.6%) females, 13 (43.3%) males, the mean age was 31.65 (± 8.08 SD), the mean duration of illness was 58.98 (± 44.78 SD).

Conclusion: This is the first MS register from the governorate of Qena. The clinical features of MS in Qena are comparable to those seen in other Arab and Western countries. Females are more likely to develop MS than males, and visual symptoms were the most frequent manifestations. Our results also illustrate the importance of developing registries in Egypt so that the clinical path of the disease can be studied prospectively.

Keywords: Multiple Sclerosis; Demographics; Qena Governorate.

Introduction

Multiple sclerosis (MS) MS is a demyelinating and neurodegenerative inflammatory disorder of the brain and the spinal cord that is one of the most frequent neurological disorders at a young age **(Dutta et al., 2007)**.

Even though MS is thought to afflict over 2.5 million individuals globally, prevalence rates vary greatly by area **(Makhani et al., 2014)**.

Despite a lengthy history of epidemiological studies on MS, the regional distribution, as well as the real frequency and incidence of the disease, remain unknown. Although the controversy persists, a better knowledge of the MS distribution has recently emerged **(Pugliatti et al., 2006)**.

Several MS centers have established MS registries to establish a population-based prevalence, examine probable risk factors, and, most critically, quantify the pace of progression and predictors of related disability in this chronic disorder **(Marrie et al., 2007)**.

According to the 2013 MS Atlas, nations in the Middle East and North Africa are in a low- to moderate-risk zone for MS. **(Browne et al., 2014)**; Recent studies, on the other hand, reveal a moderate-to-high frequency in this region, with an increase in the incidence and prevalence, particularly among women. **(Etemadifar et al., 2011; Alroughani et al., 2014)**.

MS has well-documented epidemiologic, clinical, radiological, and laboratory characteristics in the Caucasian population. **(Benamer et al., 2009)** and Several types of research have examined the prevalence, incidence, and clinical characteristics of MS in Arab populations such as Kuwait, Jordan, Saudi Arabia, Lebanon, and Oman. **(Yamout et al., 2008; Benamer et al., 2009; Alroughani et al., 2012)**. These studies differed only little from previous western research. Although Egypt is the Arab world's most populous country, with a population of almost 90 million people, the clinical features and epidemiology of MS remain poorly studied. **(Hashem et al., 2010)**.

The current work aimed to determining the demographic and clinical patients with MS referred to Qena University Hospital.

Patients and methods

Sample size and power

Literature review revealed that the prevalence of MS was 14.1/100,000 (0.014 per cent) **(Hashem et al., 2010)**. The estimated sample size at the alpha level of 5% and power of 80% was 25 subjects, Thus 30 subjects were enrolled in this study.

Study Design and setting

Descriptive cross-sectional study on (30) patients, clinically diagnosed to have MS according to 2017 McDonald criteria were included.

-They were diagnosed in the neuropsychiatry department (In-patient admission unit or out-patient clinic) from November 2018 to April 2020.

Ethical considerations

The study's objectives were explained to all patients, and they were informed that they would profit from it.

Inclusion criteria

- Established MS diagnosis according to modified McDonald`s criteria 2017.
- Age from 18 to 45.

Exclusion criteria:

- Uncooperative patients.
- Patients who were suffering from any other medical conditions (neurological, immunological, cardiologic, hepatic and renal) were excluded from this study.
- Patients under the age of 18 would be omitted to rule out other mimics of white matter

diseases in children, in addition to those over 45 years old to rule out other similar conditions of white matter lesions, such as Alzheimer's disease, hypertensive encephalopathy and arteriosclerosis.

Methods:

- All patients included in this study were subjected to the following battery of assessment:

1) Neurological evaluation

- History taking from patients.
- General medical examination.
- Neurological examination according to a standard sheet of neurology department Cairo University.

- Scoring according to the Expanded Disability Status Scale (EDSS)

Statistical analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Qualitative data were described using number and percent, Quantitative data were described using mean and standard deviation.

Results

As shown in (**Table .1**) that among the studied cases, there were 17 (56.6.5%) females, 13 (43.3%) males, according to Age (years), the mean was 31.65 (± 8.08 SD), 7 (23.3%)were FH MS, 13(43.3%) were negative Consanguinity, 10(33.3%) were 1st-degree Consanguinity, 7 (23.3%)were 2nd-degree Consanguinity

Table 1. Distribution of the MS patients according to demographic data (n = 40)

Demographic Data	No.	%
Sex		
Female	17	56.6.5
Male	13	43.3%
Age (years)	31.65 ± 8.08	
<20	5	12.5
20 – 30	9	22.5
>30	16	53.3
Residence		
Rural	20	66.6
Urban	10	33.3
Education (years)		
0	3	7.5
6	1	2.5
9	5	12.5
12	4	13.3
>12	9	22.5
>17	8	26.6
Occupation		
Not working	14	46.6
Working	16	53.3
Smoking		
No	21	70

Yes	9	30
Family History	7	23.3
Consanguinity		
No	13	43.3
1st degree	10	25.0
2nd degree	7	17.5

Clinical characteristics of the MS patients in Qena Governorate:

As shown in table (2) that among the studied cases, the mean duration of illness was 58.98 (±44.78 SD), according to Duration between onset and diagnosis, the mean total duration was 20.18 (± 25.12 SD), the mean of the Total number of relapse was 1.80 (± 1.44 SD), the mean of Time between 1st and 2nd relapse was 19.25 (± 18.89 SD), the mean of Total EDSS was 2.75 (± 1.63 SD).

Table 2. Clinical profile of the MS patients presented by Mean ± SD. :

(n = 40)

Clinical Characteristics	Mean ± SD
Duration of illness (months)	58.98±44.78
Duration between onset and diagnosis (months)	20.18 ± 25.12
Total number of relapses	1.80 ± 1.44
Time between 1st and 2nd relapse	19.25 ± 18.89
Total EDSS	2.75 ± 1.63

EDSS: Expanded disability scoring system   **SD:** Standard deviation

Among the studied cases, 12(40%) were optic, 6(20%) were Sensory, 3(10%) were Brain Stem, 2(6.6%) were Cerebellar, 3(10%) were Motor, 1(3.3%) were GTCC, 3(10%) were Multifocal as shown in (**Table.3**).

Table 3. Classification of patients according to Initial presentation:

Initial presentation	No.	%
Optic	12	40
Sensory	6	20
Brain Stem	3	10
Cerebellar	2	6.6
Motor	3	10
Fits	1	3.3
Multifocal	3	10

Discussion

This work aimed to determine the demographic, clinical, and paraclinical features of different patterns of patients with multiple sclerosis referred to Qena university hospital.

An observational cross-sectional study was conducted, consisting of 30 cases visited neurology outpatient clinic in Qena University Hospitals starting from November 2018 to April 2020.

Demographics:

As shown in table (1), there were 17 (56.6%) females, 13 (43.3%) males, with female: male ratio of 1.35:1 similar to the corresponding ratios measured in the Kingdom of Saudi Arabia (KSA, 1.32:1) **Daif et al., 1998**, Qatar (1.33:1) **Deleu et al., 2013** and Iraq (1.2:1) **Al Araji and Mohamed, 2005**. Some studies found

greater female: male ratios, such as in Jordan **(2.77:1) El-Salem et al., 2006**, Abu Dhabi (2.75:1) **Schiess et al., 2014**, Dubai **(2.85:1) Inshasi and Thakre, 2011,** Lebanon **(1.8:1) Yamout et al., 2008,** and Kuwait **(1.8:1) Yamout et al., 2008**.

According to Age (years), the mean was 31.65 (± 8.08 SD), 20 (66.6%) live in rural, 10(33.3%) live in urban, 6 (20%)were FH MS, 13(43.3%) were negative Consanguinity, 10(33.3%) were 1st-degree Consanguinity, 7 (23.3%)were 2nd-degree Consanguinity

Our values are also comparable to the new registry in Egypt mean age was (31.8 ± 78.7 SD; **Zakaria et al., 2016**), Kuwait (33.7; **Alroughani et al., 2012**), Dubai (34.49 ± 9.88 SD; **Inshasi and Thakre, 2011)** and Lebanon (40.7 ± 12 SD; **Yamout et al., 2008)**.

In our study high (43.3%) of positive family history which may be related to a high incidence of positively-consanguineous marriage compared to other studies from the new registry in Egypt (5%) **Zakaria et al., 2016**, Dubai (19%) **Inshasi and Thakre, 2011**, KSA (21%) **Daif et al., 1998** and Qatar (32%) **Deleu et al., 2013.**

Zakaria et al. (2016) reported that about 1 patient in 9 was a current smoker on average; few (2%) were ex-smokers and **Zahoor et al. (2017)** showed The vast majority (90.24 per cent) came from rural regions with low socioeconomic level, whereas just 9.76 per cent came from metropolitan regions with high socioeconomic level.

Clinical Characteristics:

The mean duration of illness in our patients was 5.17 ± 3.73 years (table 2) while the mean duration of illness reported by **Zakaria et al. (2016)** was 5.77 ± 5.3 years, **Devos et al. (2020)** showed that the average disease duration was 13 ± 11.52 years and the mean duration of illness of the

MS patients reported by **Hamdy et al. (2013)** was 3.54 ± 2.13.

The EDSS is still the gold standard for determining the severity of MS impairment (**Kurtzke, 1983**). In our study, the mean of Total EDSS was 3.31 (± 1.63 SD) was in agreement with the results of the new registry in Egypt (3.6; **Zakaria et al., 2016**), Jordan (3.9; **El-Salem et al., 2006**), EDSS scores reported by **Devos et al. (2020)** which was on average 3.86 ± 2.5 and ranged from 1 to 8, but was higher compared with patients in KSA (2.5; **Daif et al., 1998**), Dubai (2.4; **Inshasi and Thakre, 2011**), Qatar (2.7; **Deleu et al., 2013**) and Mean EDSS reported by **Hamdy et al. (2013)** which was 2.22 ± 1.29.

The mean duration of illness was 58.98 months (±44.78 SD), which matched the findings of **Zakaria et al. (2016)** (1.7 years) and the experience of a Canadian MS population, in which the second episode occurred after a median of two years (**Scalfari et al., 2010)**. The notion that neurologists were not the primary providers in the majority of these cases might have led to the diagnosis being delayed. (two years) that happened in 32.5 per cent of the patients in our research. Surprisingly, 15% of patients with motor symptoms in our research were not identified within the first two years, This was most likely since the majority of these individuals were treated by neurosurgeons and orthopedic surgeons. Due to an ophthalmologist-led awareness drive, visual complaints were detected more frequently in the first six months than in other cases.

the mean total number of relapse was 1.80 (± 1.44 SD), the mean Time between 1st and 2nd relapse was 19.25 (± 18.89 SD), the mean of Total EDSS was 2.75 (± 1.63 SD).

Clinical characteristics according to Initial presentation:

In this study, we found that the common presentations seen were 12(40%) were optic, 6(20%) were Sensory, 3(10%) were Brain Stem, 2(6.6%) were Cerebellar, 3(10%) were Motor, 1(3.3%) were GTCC, 3(10%) were Multifocal.

In contrast to our findings, **Zahoor et al. (2017)** found that the most common symptoms were sensory symptoms, spasticity, and optic neuritis, while **Hamdy et al. (2013)** found that the main systems involved were the motor (86.7 per cent), sensory (86.7 per cent), sphincters (60 per cent), brain stem (56 per cent), cerebellar (43 per cent), and optic neuritis (36.7 per cent). Motor manifestations were the most common presentation, accounting for 72.78 per cent of the total group, followed by sensory symptoms at 48.41 per cent, cerebellar manifestations at 19.96 per cent, ocular manifestations at 16.13 per cent, and brainstem manifestations at 5.3 per cent, according to **Inshasi and Thakre (2011)**. seropositive and three seronegative According to Salama et al. (2018), visual neuritis was the most prevalent presenting symptom at the time of illness initiation, followed by transverse myelitis (40 per cent and 35 per cent respectively). Five patients (25%) had area postrema as their first symptom, two of whom were AQP4. In five individuals, the brain stem was implicated from the start (25 per cent). During the disease, four individuals experienced simultaneous optic neuritis and transverse myelitis, while five patients experienced bilateral optic neuritis. According to **Hamdy et al. (2017),** motor symptoms were the most common presenting symptoms (616 of 1,404 [43.9 per cent]), followed by sensory symptoms (465 of 1,404 [33.1 per cent], while 54 patients (3.9 per cent) had unique presentations. The most prevalent clinical manifestation, according to **El-Salem et al. (2006),**

was weakness, which was detected in 30.8 per cent of the patients, followed by ocular neuritis (20.1 per cent), sensory impairment (19.6 per cent), and ataxia (14.3 per cent).

According to **Zakaria et al. (2016),** the most prevalent presenting symptoms were visual (23 per cent), followed by sensory (18 per cent), and finally motor symptoms (17 per cent).

Conclusion

The clinical features of MS in the Qena governorate are comparable to those of the rest of the Arab world, as well as those of Western countries. We discovered that MS is more common in females in the Qena governorate, with visual symptoms being the most common presentation. Our results highlight the urgency of developing registries in Egypt to research the clinical path of MS and the epidemiology of MS in Egypt prospectively.

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