



PATTERN OF PREVALENCE OF MULTIPLE SCLEROSIS IN BENGHAZI-LIBYA

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ABSTRACT Multiple Sclerosis (MS) is a disease that attacks the central nervous system and affects the brain, spinal cord, and optic nerves. In MS, immune system attacks the protective sheath (myelin) causing communication problems between the brain and the rest of the body. This is a retrospective study that included 23 patients diagnosed with MS and admitted to Neurology Clinic in Benghazi Medical Center during the period 2010-2018. This study aimed at analyzing the pattern of symptoms and drug treatment among MS patients and measuring the crude prevalence of MS in in Benghazi city. Females represented 78.3% while males represented 21.7% of study sample with average age of female patients was 42.9%. Distribution of study sample over different age periods was determined and symptoms recorded included weakness, numbness, spasticity, tremor, blurred vision, paralysis and vitamin D deficiency. The crude MS prevalence rate in Benghazi city is around 3.4 per 100,000 people.

KEYWORDS : Multiple Sclerosis – prevalence – Benghazi - Libya

INTRODUCTION

Multiple Sclerosis (MS) is a disease that attacks the central nervous system and affects the brain, spinal cord, and optic nerves.¹ Normally, myelin sheath helps the nerves conduct electrical signals quickly and efficiently. In Multiple Sclerosis (MS), the immune system attacks the protective sheath (myelin) causing communication problems between the brain and the rest of the body. Risk factors for MS include: age, sex, family history, ethnicity, certain infections, genetic factors, race, certain immune disease and others. There are four types of MS: First, clinically isolated syndrome (CIS) which is a single first episode with symptoms lasting at least 24 hours. Second, relapse-remitting MS (RRMS) which is the most common form, affecting around 85 percent of people with MS and involving attacks of new or increasing symptoms. Third, primary progressive MS (PPMS) its symptoms worsen progressively, without early relapses or remissions. Fourth, secondary progressive MS (SPMS) which is after initial episodes or relapse and remission, the disease progresses steadily.¹ The symptoms of MS vary widely between patients, but the most common symptoms include numbness or weakness in one or more limbs that typically occurs on one side of your body at a time, or the legs and trunk, partial or complete loss of vision, prolonged double vision, tingling or pain in parts of your body, and others. There's no cure for MS, but medicines and lifestyle changes can help to manage the disease.² An important epidemiological study was carried out in Benghazi in 2001, showed that the prevalence of MS is 4 per 100,000.³ Since 2001 nothing was published about MS in Benghazi. This study was conducted to analyse the pattern of symptoms and drug treatment among MS patients in Benghazi city. The study also aimed to measure the crude prevalence of MS in Benghazi city.

Patients and Methods

This retrospective study was conducted in Neurology Clinic at Benghazi Medical Center (BMC), Benghazi, Libya.

Study Design: Retrospective study

Study Location: BMC, Benghazi, Libya

Study Duration: 2010-2018

Sample size: 23 patients.

Sample size calculation: The 23 patients included in this study are all the patients diagnosed with MS in Benghazi city during the specified period of the study.

Subjects & selection method: Data collected from medical records of

the 23 patients. Collected data included demographic data, vitamin D test results, symptoms and medications used. Demographic data included age and gender. Drug history, treatment history & life style factors were noted.

Inclusion criteria:

1. All patients diagnosed with Multiple Sclerosis and admitted to Neurology clinic in BMC during the period 2010-2018
2. MS patients who were diagnosed with other diseases such as Diabetes Mellitus, Hypertension, Hypothyroidism, Crohn's Disease, Celiac disease and asthma they were also included in the study.

Procedure methodology

Data collected from medical records of the 23 patients. Collected data included demographic data, Vitamin D test results, symptoms and medications used. Demographic data included age and gender. Drug history, treatment history & life style factors were noted.

Statistical analysis

Microsoft Office Excel 2007 was used for the analysis of results.

RESULTS

Females represented 78.3% while males represented 21.7% of study sample with average age of female patients equals 42.9% while average age of male patients was 40.8%. Analysing the distribution of MS patients from study sample over different age periods showed that; 2 patients aged 18-28y, 6 patients aged 29-38y, 7 patients aged 39-48y, 5 patients aged 49-58y, 3 patients aged 59-68 (figure 1).

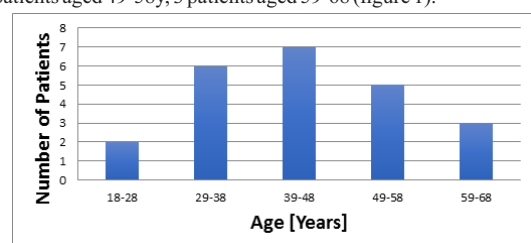


Figure 1: Distribution of Multiple Sclerosis patients over different age periods.

Regarding symptoms, all patients included in the study suffered from

weakness, numbness and vitamin D deficiency (figure 2). About 80% of males while more than 30% of females suffered from spasticity, 20% of males while 10% of females suffered from tremor, 60% of males while 70% of females suffered from blurred vision and 40% of males and 30% of females suffered from paralysis (figure 2).

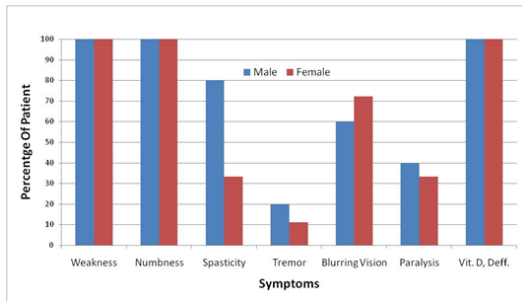


Figure 2: Clinical features of multiple sclerosis among patients included in the study.

The treatments used for MS patients included in this study were methyl-prednisolone, interferon, tryptizole, pantoprazole, tegretol, B-complex and vitamin D, in addition to physical therapy (figure 3).

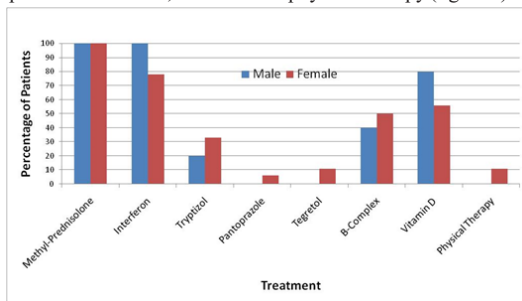


Figure 3: Treatment of Multiple Sclerosis patients included in the study.

DISCUSSION

The study was conducted in BMC on MS cases that were admitted to the neurology clinic during the period 2010-2018. The study was conducted according to the criteria shown in the protocol chapter. The study shows that patients with MS had an average age of 42.4 years. More Females were affected by Multiple sclerosis than males in this study, noting that males were on average of 2.1 years younger than females (40.8 vs 42.9 y).

The population in Benghazi city is 674,951 people, which makes the crude prevalence rate around 3.4 per 100,000 people. Rates of 5 or lower per 100,000 are considered of low frequency, rates of 5-29 per 100,000 are considered of medium frequency, and rates above 30 per 100,000 are considered of high frequency. Therefore, the current rates of MS in Benghazi are definitely of low frequency. According to a previous study on MS prevalence in Benghazi in 1985, the crude prevalence was 4 per 100,000. This means that the frequency of MS prevalence in Benghazi are still low. On the other hand, the MS prevalence rates in the Mediterranean region is within the medium frequency rates³

It has been noted that there are variations in clinical and pathological features between MS patients of different race. There is for example more occurrence of visual impairment in Asian MS patients than others⁴ A comparison of the frequency of the symptoms and signs on examination in individual studies depends to a certain extent on the time interval between onset of the disease and examination⁵ In this study, all patients had the same symptoms as weakness in lower limb, fatigue, numbness, blurring vision, some patients have spasticity, tremor or even paralysis. The mean serum of vitamin D level were low in all patients was (10.41ng/ml). Vitamin D Deficiency is a common result and frequent cause of MS, vitamin D supplement may reduce recurrence of attack. In 1974, Goldberg hypothesized that 25(OH)D3 deficiency may be an environmental factor that increases the risk for MS development. Since then, this hypothesis has been verified by many studies⁶ Other studies have shown that 25(OH)D3 levels in MS patients were negatively correlated with MS activity⁷ Based on these studies, investigations on the therapeutic effects of vitamin D

supplementation on MS patients have been performed⁸⁻¹³ Age, disease duration, sex, BMI, ethnicity, MS therapy etc. have been controlled for as covariates in a report on the association between vitamin D deficiency and progression of disability in patients with MS. The MS Severity Score (MSSS) is currently the best available measure of the speed of disability accumulation in MS and to detect different rates of disease progression.^{14,15} Previous results showed that patients with vitamin D deficiency had a higher progression of the disease when compared to those with sufficient vitamin D status. The data of the present study are coherent with Mandia's et al. studies which reported an inverse relationship between lower vitamin D concentration and MSSS and Expanded Disability Status Scale (EDSS), respectively.¹⁴⁻¹⁶ However, it should be emphasized that the association could equally be due to a causal effect of EDSS and/or MSSS on vitamin D levels. Mandia's et al. study has found association between levels of 25(OH)D and higher EDSS and MSSS, independently of confounders variables.¹⁵ On contrast other studies showed that vitamin D status is not associated with disability or disability progression over years of follow-up in MS patients^{7,17}

CONCLUSION

According to this study, crude prevalence of M.S in Benghazi is approximately 3.4 per 100,000 population with females being more affected with MS than males. Most common presenting symptoms in females were blurred vision and spastic para paresis while for males' spasticity, spastic para paresis and tremor were the most presenting symptoms. Noting that all patients suffered from weakness, numbness and vitamin D deficiency. Steroid is the most commonly used medication at attacks of MS, mainly to calm the flare. The most commonly used drug for MS treatment is interferon beta-1a including Avonex and Rebif. Vitamin D supplements are usually prescribed for MS patients.

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