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Research Article

TRIGGERING FACTORS OF MULTIPLE SCLEROSIS PATIENTS IN THE GULF STATS COUNTRIES

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ABSTRACT

The demyelination of the nerves in the central nervous system, called multiple sclerosis (MS), causes a disturbance in functions and is associated with many other symptoms. There is a well-known geographical zone with a high incidence of MS. This may be related to predisposing factors in that environment or to the lifestyle of individuals who live in that zone. In the last few decades, MS was found to have spread to other zones. within these new zones the causes may be different or the pathogenesis still not yet understood which consequently need further investigation.

This study investigates the clinical and pre-clinical factors which may contribute to the incidence and relapse of MS. The study employs a cross-sectional study that uses an electronically distributed survey. Open and closed questions were created to address the possible factors triggering the incidence of MS in GCC countries.

The results showed a high incidence among teenagers (29%) as compared to 10% in the literature. The ration of female/male was 2.7: 1 respectively. The results also indicated the following factors: decreased sports activities, poor diet, limited sun exposure, and increased fast food intake. Other predisposing factors were emotional stress, chronic family conflict, abuse, lack of sleep, smoke, and chronic fear. Heat and humidity were found to exacerbate the symptoms in almost 37% of the population.

Conclusion: The study highlighted aspects which may be considered predisposing factors for MS. Lifestyle and psychosocial corrections are necessary to protect new generations in the GCC from MS and other neurogenic and autoimmune diseases.

INTRODUCTION

Literature Review

Neuroimmune disorders are a spectrum of diseases that emerge from disrupted interactions between the nervous and immune systems. Over the past few years, emerging data have consistently shown an increased number of multiple sclerosis (MS) cases in the Arabian Gulf countries. These countries share a similar lifestyle, language, water resources, weather and atmosphere, and geography. An increase in cases of MS in those countries could indicate the importance of targeted susceptibility factors.

Multiple sclerosis (MS) is a demyelinating disease in which the insulating covers of nerve cells in the brain and spinal cord are damaged.[1] This damage disrupts the ability of parts of the nervous system to communicate, resulting in a range of signs and symptoms, including physical, mental, and sometimes psychiatric problems,[3][4][5]. Specific symptoms can include double vision, blindness in one eye, muscle weakness, trouble with sensation, or trouble with coordination.[1] MS takes several forms, with new symptoms either occurring in isolated attacks (relapsing forms) or building up over time (progressive forms).[6] Between attacks, symptoms may disappear completely; however, permanent neurological problems often remain, especially as the disease advances.[6]

The cause of MS is unknown; however, it is believed to occur as a result of some combination of psychosocial, lifestyle, genetic and environmental factors such as infectious agents.[3] Theories seek to combine the data into likely explanations, but none has proved definitive. While there are a number of environmental risk factors and although some are partly modifiable, further research is needed to determine whether their elimination can prevent MS.[7]

MS related to geographic location is more common among people who live farther from the equator, although exceptions exist.[3][8] These exceptions include low-risk ethnic groups that are far from the equator, such as the Samis, Amerindians,

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Canadian Hutterites, New Zealand Māori,[9] and Canadian Inuit,[2] as well as groups that have a relatively high risk close to the equator, such as the Sardinians,[2] inland Sicilians,[10] Palestinians, and Parsi.[9] The cause of this geographic pattern is not clear.[2] While the north-south gradient of incidence is decreasing,[8] as of 2010, it was still present.[2]

MS is more common in regions with northern European populations; the geographic variation may simply reflect the global distribution of these high-risk populations.[2] Decreased sun exposure resulting in decreased vitamin D production has also been put forward as an explanation.[11][12][13] Literature has confirmed that Arabian Gulf countries have reported a progressive increase in MS in the last few years, [15]. Low vitamin D levels could have contributed to the increasing number of MS cases in the last few years. Vitamin D deficiency in this region may stem from a lifestyle based on technology, sedentary activity, lack of exposure to sunlight, and unhealthy dietary patterns, all of which could be addressed to curtail regional cases of MS, [15].

A relationship between season of birth and MS lends support to this idea, as fewer people born in the northern hemisphere in November as compared to May are affected later in life.[14] Environmental factors may play a role during childhood; several studies have found that people who move to a different region of the world before the age of 15 acquire the new region's risk for MS. However, if migration takes place after age 15, the person retains the risk that prevails in their home country.[3][7] Some evidence suggests that the effect of moving may still apply to people older than 15 years of age.[3] The increased spread of MS to other geographic non-risk zones indicates that environment and lifestyle may be strong co-factors. In the Middle East, many factors may trigger MS and be the primary causes of a high occurrence of relapse. Among these possible factors are climate and dramatic changes in lifestyle. This study aimed to investigate the possible preclinical triggering factors of MS in the Gulf (GCC) countries and to find out what worsens symptoms in relation to local factors. The epidemiology and figures must be related to the worldwide number of MS cases.

METHODOLOGY

This is a cross-sectional study which used an electronically distributed survey. Open and closed questions were posed to address the possible factors triggering the incidence of MS in GCC countries. Following are the questions that this survey addressed.

At the very beginning, did you think the incidence had pre-clinical early symptoms? If yes, please indicate. 2: Do you think you got MS following a psychological shock or after being exposed to a difficult situation? If yes, please indicate. 3: Do you have a history of abdominal illness which you think has a relation to the incidence of MS? If yes, please indicate. 4: Did you excessively use anti-inflammatory or any other long-term drugs which you think has contributed to the incidence of the disease? If yes, please mention the drug and for how long you used it. 5: Did you try a certain diet? If yes, has it had any effect? And what type of diet do you follow? 6: Do certain foods exaggerate the symptoms of MS? If yes, please mention them. 7: Was your life before MS dominated by certain bad habits, e.g. smoking, lack of sleep, emotional stress? If yes, please mention them. 8: Which of the following symptoms dominates your condition more; pain, difficulty moving, imperfect performance, lack of confidence, sexual disturbances. 9: Did you practice regular sport before the incidence of MS? Do you think the weather has an impact on your MS symptoms? If so, how? 10: Did you try to find out what exacerbated the symptoms in your case? If yes, what did you do? 11: Do you think you have found a way to live with MS? 12: Does anyone in your family have MS? : If yes, what is the kinship to you? 13: Are you using medication for MS? if yes, please mention the name of the medication.

Results were posted to SPSS and Excel for the statistical test and graph production. Due to the number of variables the data was represented in an absolute number and percentage. Some variables were represented in graphs and discussed in relation to similar results in the literature.

RESULTS

The data were reviewed, studied and presented in table and graphs. Primerly the female/male ration was 2.7: 1 respectively.

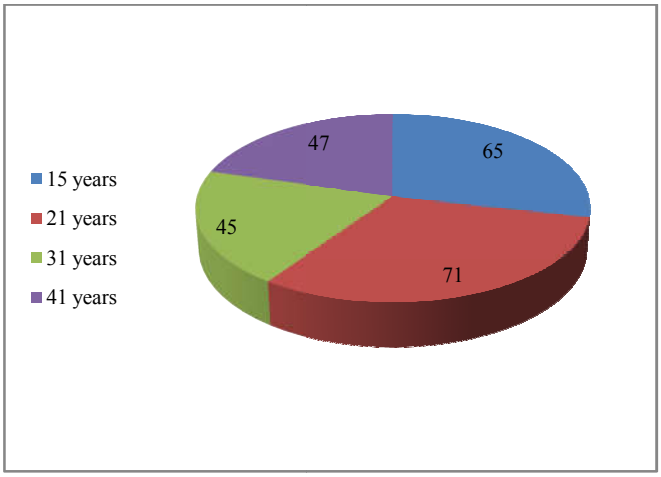

Fig 1 the ages of the 228 patients are divided into four categories 15+, 21+, 31+, 41+. Almost 29% are below the age of 20, which is a very high percentage relatively to the figures in the literature.

Table 1 below represents the absolute response of 228 MS patients on the comprehensive survey with respect to the possible factors that contribute to the incidence and exacerbation of the condition. Among the patients, 124 (54%) have predisposing factors; 105 patients had early age psychological difficulties. Many factors related to the lifestyle and social and family were represented in the table. n/a=no answers

Item	Yes	No	n/a	Remark
Pre-disposing factors	124	70	34	
Pre-clinical psychological, difficult situation,	105	84	41	
History of abdominal illness	55	139	37	
Use of anti-inflammatory or long-term drug	20	167	41	
Use of a certain diet, whether it has had an effect	55	136	37	Has a significant effect on most (55) of the cases
Exposure to regular sunlight throughout the week	60	144	24	Yes 60 = regular program/daily No 144 = few

				minutes during non-indented time
Certain foods exaggerate the symptoms of MS	72	118	38	Yes 72 = lamb meat, cheese, caw milk, sugar
Fast food habit before incidence	135	67	26	Yes 135 = average of 5 times/week
MS preclinical dominated by certain factors (one or more), e.g., smoking, emotional stress, lack of sleep	182		46	Arrange by top rating emotional stress 143 lack of sleep 121 chronic conflict 133 heavy smoker 82 family abuse 78 chronic fear 93
Symptoms that dominate condition, e.g., pain, difficulty moving, imperfect performance, lack of confidence, sexual disturbance	181		47	Arrange by top rating weakness pain difficulty moving imperfect performance lack of self-confidence sexual difficulties
Practice of regular sport before incidence	69	122	37	
Weather-related impact	126	64	38	
Factors that exaggerate symptoms: hot cold both n/a	 84 18 15 111			
Has found a way to live with MS	155	33	40	
Family member with MS and, if so, kinship	22	139	67	8 first kin (3.5%)
Regular use of medication for MS	161	31	36	

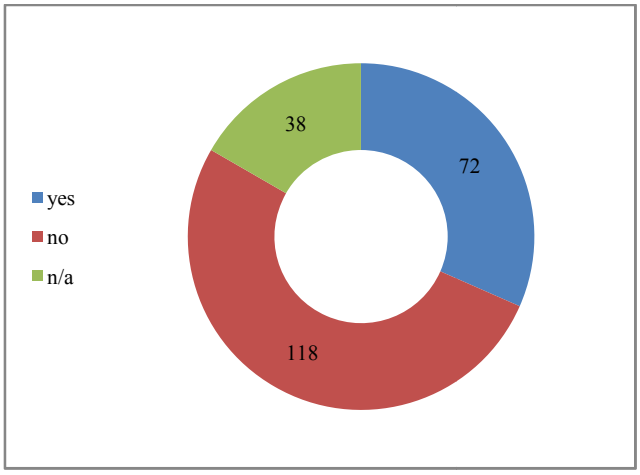

Fig 2 An astonishing result is the answer to the question "Do you think your condition is affected (either exacerbated or remitted) by certain foods?" The majority of patients said that their daily food intake has neither a positive nor a negative effect. This results represent all patient who follow a certain diet and other patients who have an open food menu. In the discussion section, we will highlight this particular aspect.

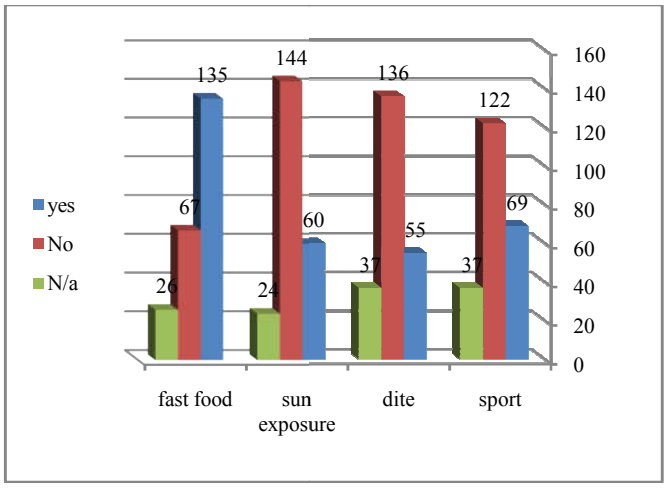

Fig 3 Combined the respondents' answers on the preclinical status related to sport, diet, exposure to the sun and weekly intake of fast food. The data indicates poor connection to these factors which are believed to be a strong predisposing factor for MS

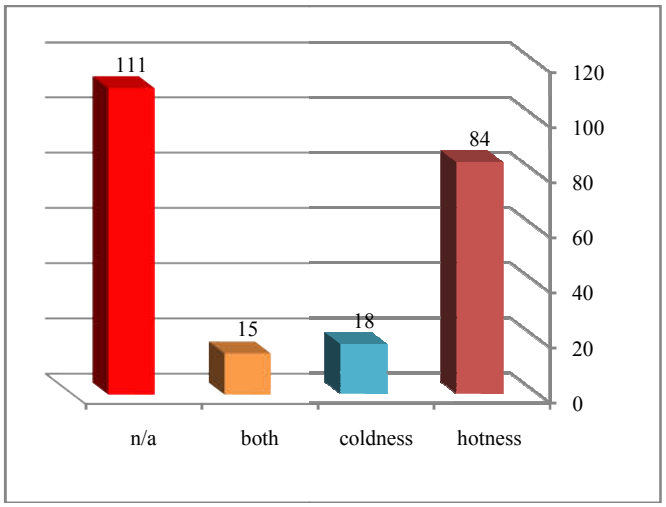

Fig 4 Weather effects were charted and represented. The majority were not certain and did not provide answers. Heat was regarded as an aggravating factor by 36% of respondents.

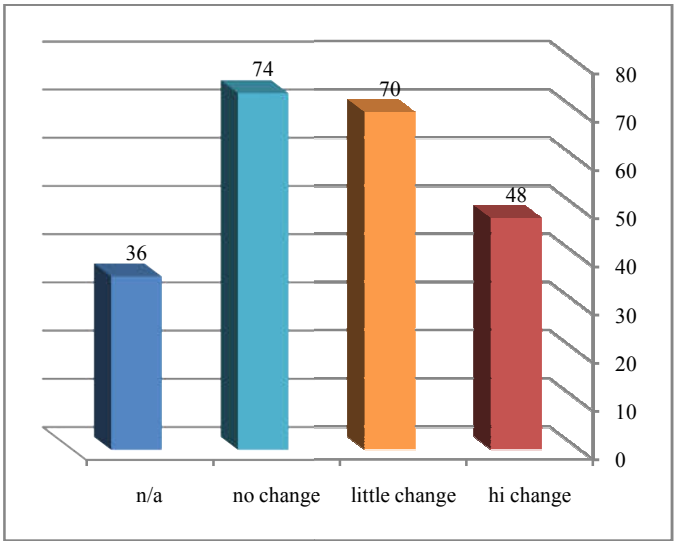

Fig 5 The entire population was surveyed on the effect of open chart food versus a controlled but not specific diet. which one make their condition better? The answers were as follows: 21% noticed a significant change, 31% noticed a small change, and 32% noticed no change. This result and the result of Fig. 3 indicate a poor appreciation of the effects of food and a lack of management of this factor.

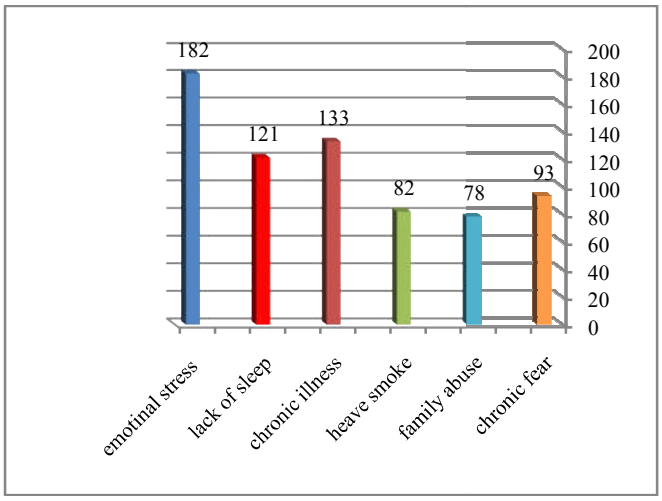

Fig 6 Psychological and habitual factors were identified as important factors triggering symptoms of MS. Emotional aspects were seen as a dominant factor and were regarded as aggravating symptoms. Some patients highlighted more than one factor.

DISCUSSION

The above results provide strong evidence for the fact that MS is a syndrome rather than a disease. The well-known geographic map is no longer considered a static location for this syndrome, as observation has shown a progressive increase in many places across the globe. This study showed many factors that trigger the incidence of MS in the GCC region – factors which are very much connected to the environment and the lifestyle. Prominent factors were related to lifestyle, which aligns with the outcomes of Eiman[15] . and may be behaviors rooted in the family, e.g., emotional and chronic conflict as well as physical and psychological *abuse. Some of the highlighted tragedy are the emotional relation and the feeling of threatening, non-secure or inheriting bad habits, e.g., smoking and lack of sleep, were all cited in most of the answers. Table 1 highlighted most of the patients' responses. A remarkable increase in incidences of MS among teenagers, who accounted for 29% (Fig. 1) of the total population, may be considered a red flag, as the literature cites teenagers as around 10% of the total population of MS patients [16] . Additional studies might be required to identify incidence of MS with respect to age categories. In this regards Studies looked at the early life psychosocial factors influencing disease onset found that cohorts of participants with MS had a higher prevalence of negative life events, self-defined family conflicts, and poorer utilization of social support resources compared to healthy controls[24] .

Adverse events occurring as early as childhood have been linked to MS clinical disease clinical features. For example, emotional stress and physical abuse and neglect in childhood have been associated with increased rates of relapses in a cohort of teen and adult MS patients[25]. However, the exact role of early-life adversity in MS remains elusive.

Among the factors that may contribute to the increased number of MS cases is hot weather, which was cited by 41% of the study sample. This contradicts the notion that MS is highly incident in cold-weather countries. However, heat exposure is minimal among most of the GCC population, as they spend most of their time at home in air conditioning. It has been recognized as a major factor in incidences of osteoporosis and other illnesses, particularly among female. This fact might require further investigation. In many people with MS, the disease presents with intermittent periods of relapses and remissions. However, sensitivity to heat and humidity, causing an exacerbation of symptoms, is different from relapses, [17].

The epidemic spread of vitamin D deficiency, [16] and the increased incidence of osteoporosis in GCC citizens may be connected to decreased sunlight exposure, which has been put forward as an explanation.[11][12][13]

The result of figures 3 and 5 represent the massive change of lifestyle and nutrient habits may contribute to the increased rate of MS at these countries. A significant lifestyle change in these communities from a simple, natural life to a sedentary life with a massive transformation in dietary habits has exposed the body to many risks, reduced tolerance, and affected the immune system[118,19] .

This modification may even impact the behavior and stress management of the new generation. Stress, conflicts, smoking, fear, and abuse were found to be significant factors or cofactors in most cases. The lack of sport or simple physical activities was identified as a co-factor in the majority of cases. This means a lack of physical fitness may be associated with the expected increased risk of MS[20]. This may also contribute to psychological decline; stressful life events that compromise the immune system may be associated with the onset of multiple sclerosis[21].

The overall goal of this study is to highlight the physical-psycho-social factors that may heavily contribute to the increased number of MS cases. A notable contribution is made by nutritional habits and diet; a link has also been established to sport and family relationships.

The genetic factor of the first degree kinship represent 3.5% of the total population. This aligns with the findings of[23] . However this particular factors need a specific investigation related to the incidence, type of gene and the medical management.

However, a majority of the patients admitted to experiencing difficult interfamily situations, as well as a lack of community and governmental support, particularly with respect to social workers, schools, universities, workplaces, and nongovernmental associations. The said support meant to be a logistic, advisory ,educational which focuses on health related topics.

Many patients (68%) showed a progressive accommodation of MS symptoms; they modified their lifestyles to minimize the effect of MS and to maintain a reasonable level of independence. This group confirmed a commitment to taking medication, engaging in reasonable physical activity, and consuming healthy food. This helps them maintain their independence and keep their jobs for long periods of time[23].

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