CASE REPORT

When Extreme Stress Reveals Multiple Sclerosis: A Case Report

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Received: 1 August 2012 **Revised:** 2 November 2012 **Accepted:** 1 December 2012

Abstract

A prior history of healthy lifestyle may be misleading when we consider associated risk factors for developing a serious and debilitating condition such as multiple sclerosis under extreme stress. The author reports a case of a woman who lived a healthy life and yet experienced an unexpected event leading to the diagnosis of multiple sclerosis. The patient's condition was predominantly provoked by a major motor vehicle accident resulting in temporary paralysis. Significant family disbelief ensued for the way medical professionals addressed the patient's concerns and questions. The author then reviews the literature on the onset of MS and highlights the importance of competent care, promoting hope for healing and dietary approach to manage multiple sclerosis.

Please cite this article as: Fooladi MM. When extreme stress reveals multiple sclerosis: A Case Report. IJCBNM. 2013;1(1): 69-75.

Keywords: Multiple sclerosis; Patient communication; Bedside manner; Diet; Holistic approach

Introduction

Multiple sclerosis is not a new disease and most of the research studies are outdated, indicating the need for a fresh look at this chronic condition. Until recently, healthcare providers practiced medicine by using a set of non-evidence-based criteria to diagnose and treat various diseases including MS. Now, a greater emphasis has been placed on using a set of criteria to diagnose MS and other diseases. According to the International Panel for Diagnosis of MS,[1] tools such as magnetic resonance imaging (MRI) have been used to better detect typical, "monosymptomatic", relapsing-remitting, and insidious progressive MS cases. Diagnostic tools are important especially when there are no clear data available to support the diagnosis of MS. The panel has recommended that healthcare providers avoid using terms such as "clinically definite" and "probable MS", and instead use "possible MS" (if at risk), or "not MS." Also, using combined assessment tools have contributed to more accurate diagnosis of MS.[1,2] In 2000, the revised criteria was introduced based on clinical trials which included the integration of MRI as an overall diagnostic tool for its unique sensitivity to pathological change and

the diagnosis of primary progressive disease.[2] As the diagnostic criteria for MS were being refined and revised, technological advances were on the way to detect different versions of the disease manifestations.[2]

A few diagnostic criteria have considered the objective evidence of lesion dissemination in time and space as a typical feature of MS; clinical signs and historical accounts of the symptoms; use of radiological and laboratory tools such as MRI, cerebrospinal fluid (CSF), and visual evoked potentials (VEP), specifically for patients who have manifested vague features and a single test has apparently been inadequate to diagnose the condition with certainty. In older patients with primary progressive MS and progressive myelopathy, MRI has a different usefulness especially when they have micro vascular ischemic disease. Other investigation tools have shown limited capacity to diagnose MS.[3] In many cases, the patient might have some of the clinical presentations for MS and yet has never been evaluated. Under newly established criteria, a patient with only few symptoms would be diagnosed as "possible MS" and providers should no longer use terms such as "clinically definite" or "laboratory supported" for diagnosis of MS.[2,3]

Looking back at centuries ago, medical science discovered the presence of brain lesions in MS patients to indicate an inflammatory and demyelination disease process which could cause a change in the core body temperature or show a source of infection.[4] The use of imaging scan (MRI) can detect brain lesions and provide evidence that lesions are being disseminated both in time and space. In fact, from an approved diagnostic list of criteria suggested by the panel, 3 or 4 characteristics should be present regarding the number, size, location of the lesions and the number of clinical attacks in order to make a diagnosis.[5,6]

An abnormal CSF analysis offers supportive evidence that a lesion may have an evolving immune and inflammatory process. This would be hard for MRI to detect it, especially among the elderly patients for lacking specificity or in atypical cases. To diagnose MS, a combination of clinical testing and evaluation are required. Failure to use multiple diagnostic tools may lead to unreliable results and inaccurate diagnosis.[1]

For patients diagnosed with MS, having an abnormal visual evoked potential (VEP) screening is also expected to support the clinical and objective findings when a brain lesion affects the visual pathways.[1,2] Adding VEP results to MRI and CSF analysis helps clinicians appropriately interpret the laboratory results to diagnose MS. In addition, an accurate prognosis depends on the number of MS attacks and brain lesions.[1-6]

Other studies recommend the use of diagnostic criteria and attention to the number of attacks and lesions. When a patient reports one attack and MRI reveals two or more brain lesion dissemination in time, clinician should carefully consider the timing of clinical attack and subsequent scans. A minimum of 3 months between the clinical attack and a new lesion may be an arbitrary interval to consider in order to reduce the risk of MS misdiagnosis, especially in cases with acute dissemination of encephalomyelitis and stuttering onset.[7] However, if MRI is not performed, but a second clinical attack has occurred, then the criteria for dissemination in time is fulfilled. When there is one attack and one lesion, the patient would be diagnosed with MS if dissemination of lesions in space and time has been established. In a typical situation, a patient would have a single and isolated clinical manifestation which suggests a type of MS known as "monosymptomatic." Therefore, the diagnosis of MS requires the evidence of lesion dissemination in space or, the absence of at least two brain lesions by MRI, in addition to a positive CSF. Also, there should be an evidence of dissemination in time based on the patient's presentation of one attack and the evidence of two brain lesions. In such cases, if MRI has not been performed, a second attack

indicates the presence of a lesion at a different site, which satisfies the criteria for dissemination in time and space.[7]

Insidious neurological progression which points to MS could be difficult to diagnose and use of stringent criteria can help reduce diagnostic errors. When CSF results are abnormal, clinicians should consider an inflammatory and immune system involvement supported by MRI evidence for dissemination in space and by VEP for time, in order to diagnose "primary progressive MS". Clinicians must document "No Better Explanation" when the objective findings strongly suggest MS.[1]

Case Description

While waiting for a meeting, I met an attractive Iranian woman, Sarah, who walked across the room to sit next to me. After a brief introduction, our conversation took an interesting and personal turn when she decided to talk about her amazing life experience which she called "a miracle and divine intervention".

Sarah, aged 50, was an aerobic instructor and happily married to a successful business man and had two grown up daughters. She lived a healthy lifestyle full of opportunities to travel around the world when suddenly everything turned upside down. "I had a serious car accident when a speeding full size trailer hit me sideways and threw me off the road. I walked out of my car without a single scratch and the car was sent to be repaired. I remember sitting on the sidewalk, people gathering around me and calling for help. I felt an extreme heat around my head and neck and asked if anyone had cold water to pour over my head."

Sarah was immediately transferred to the emergency department of a local hospital when she sensed a right side paralysis and urinary incontinence. She was seen by two neurologists, Dr. N and Dr. A, who assessed her condition and told her she had multiple sclerosis (MS). Not knowing what the disease was and in tears of disbelief, Sarah asked "what is MS?" and heard Drs. N and A saying, "this is what we call a chronic cancer." Devastated and in mental disarray, Sarah's family made all the arrangements and within 24 hours transferred her to Tehran, the capital of Iran for further evaluation. She was seen by Dr. JL, a well known neurologist in Iran with an impeccable professional and personal reputation. Sarah called him "a star in medical field."

According to Sarah, Dr. JL had a superb bedside manner, offered her emotional support and gave her hope and encouragement to have a positive attitude. He did a thorough physical assessment with an extensive series of neurological tests to check her brain, cranial nerves and reflexes functioning. He confirmed the MS diagnosis and began a series of outpatient treatments with a specific dietary regiment including honey, dates, sesame seed paste known as tahini, and cooking with animal fat and sunflower oil.

Within a few days, Sarah's right side paralysis vanished and she gained bladder control. Sarah did not get any physical therapy but continued with her regular warm oil message and light exercises. Sarah was prescribed oral and subcutaneous anti-spasmodic medications and vitamin B1 for the next 3 years.

I asked Sarah about her family reaction and coping skills with such unexpected crisis. Sarah broke down in tears and recalled the devastating moments after local doctors (N and A) told her she had "chronic cancer". She talked about her husband and daughters trying to remain strong at her side while she could sense their pain and despair. She spoke with warmth and admiration about Dr. JL and how efficient he was for an amazing recovery. She praised God and deeply believed the reason for her successful recovery was the way Dr. JL approached her and offered hope for recovery.

Discussion

As a healthcare provider, we may wonder how Sarah could be diagnosed with MS without any prior history or any indication soon after a major car accident. Answer to this question would have multidimensional importance for patient and public education, prevention, further research and professional development.

For accurate diagnosis of MS, subjective and objective data are required to differential findings before diagnosing. Establishing an inflammatory disease state would be a key indicator. Clinicians must follow the international diagnostic criteria and use a combination of methods such as MRI, VEP and CSF to find "possible MS" and further add the number of attacks and lesions to diagnose MS.[8] Sarah experienced very high body temperature in her head and neck area after being hit by a large trailer. On examination, this subjective information could raise the suspicion of an attack and supported by objective clinical findings to diagnose MS.

The recommended criteria are established for individuals between the ages of 10 and 59 years. Anyone younger or older and those with a progressive onset may fit the "atypical" group who could exhibit dementia, epilepsy, or aphasia. More details fall within differential diagnosis including multifocal areas of cerebral ischemia or infarction among younger patients with phospholipid antibody syndrome, acute disseminated lupus erythematosis, Takayasu's disease, meningovascular syphilis, or carotid dissection.[9] Other conditions such as Lyme disease and leukodystrophies have similar presentations as MS, especially among children and teenagers.[10] It is important for clinicians to understand and educate their patients that diagnosis of MS can only be confirmed upon autopsy or lesion biopsy.[11,12]

Multiple sclerosis is mainly a clinical problem and lesion biopsy is not indicated as a standard practice for diagnosing MS. Use of MRI helps uncover a "silent disease" but MS is diagnosed in part by subjective and objective data. In fact, when a group of researchers examined and compared the distribution of lymphocyte infiltration in demyelinated lesions of the cerebral cortex and brain tissues of 10 patients with MS and 5 patients without MS, they found that MS patients had the highest density of C D3- positive T cells in white matter lesions and fewer T cells in cortical lesions which extended through white and gray matter. This study showed that intracortical demyelination in patients with chronic MS does not originate from increased lymphocytes, or from their subset distribution, when compared to the control group. Researchers believe that the extent of MS lesion lymphocyte infiltration directly depends on the lesion site.[13]

Based on the literature, Sarah-an aerobic exercise instructor, seems to be an unlikely candidate for developing MS. In a related study, researchers selected MS patients from an inpatient rehabilitation program and randomly divided them into an exercise training (MS-ET) and non-training groups (MS-NI) to assess them 4 weeks before and after aerobic exercise training. When results of a graded maximal exercise test which measured gas exchange and lung function test were compared to the baseline, the MS-ET group showed significant improvement in health perception such as vitality and social interaction and increased activity level with less fatigue. They also found an overall low compliance rate and lower than expected incidence of exacerbation with physical activity.[14]

Knowing that MS, as a silent disease, has an effect on the visual pathways, researchers studied 388 patients with acute optic neuritis (AON), in an attempt to identify high and low risk factors leading to MS. They found an overall 38% ten year risk factor for developing MS with 95% confidence interval between 33%-43%. The risk factor for patients with one or

more brain lesions on a baseline MRI was 56% compared to those without a lesion at 22%. Male patients with optic disc swelling and no brain lesion had a lower risk for developing MS and exhibited atypical features for optic neuritis such as no light perception vision, no pain, severe optic disc edema, peripapillary hemorrhages, or retinal exudates.[15]

Drug treatments on relapsing MS patients included simvastatine injections which later proved ineffective and costly. Therefore, researchers proposed using 80 mg oral simvastatine for 30 MS patients in relapsing and remitting state and found oral simvastatine was well tolerated and could inhibit the inflammatory components of MS which often leads to neurological disability.[16] Not all experimental drug treatments generate the expected results as a brief clinical trial report revealed a 46 year-old woman with relapsing-remitting MS died from multifocal leukoencephalopathy (PML) after 37 doses of 300 mg natalizumab given every 4 weeks in addition to interferon beta-1a. The diagnosis of PML was based on the CSF results at autopsy.[17] Also, another group of researchers compared the clinical effects of interferon beta-1a at 22microgram dose subcutaneously with placebo for 2 years to assess the occurrence rate of MS relapses and reported a significantly lower occurrence rate with active treatment.[18]

Conclusion

To understand MS and its relation to Sarah's case, we looked at a few studies from clinical perspectives. But Sarah's experience was beyond a clinical condition as it revealed three significant non-clinical and less researched issues. These view points were: 1) the importance of patient-provider relationship, 2) hope in healing, and 3) dietary regimen for MS recovery.

Nurses have known the importance of patient-provider relationship and witnessed careless use of words such as "cancer" with profound effects on patients' life. Given the opportunity, Iranian nurses could speak of untold stories about their patients afflicted with depression due to unkind demeanor of a clinician. Indelicate approach to patient's need for information on their health status could be devastating and life changing. One may ask why some healthcare providers lack sufficient compassion. Clinicians commonly justify their approach and contribute their abrupt behavior to the patient-overload, long practice hours, lack of sleep and exhaustion. In the court of public opinion, nothing can justify cruelty to patient when all they need is information. The reasons for such behaviors are often self-imposed and focused on greed. Some physicians are simply not interested in talking with patients and believe "I am not paid to educate patients…." The impressive success in medical technology seems to have failed in preserving a simple human need to relate two people-the patient and physician.

In relation to Sarah's dietary regimen, a research report showed the protective effects of Vitamin D and how it can help reduce the risk of developing MS. According to 2 large cohort studies on women, dietary vitamin D intake had a direct relationship with MS reduction. the study participants were women in Nurses' Health Study (NHS; 92,253 during 1980 to 2000) and NHS-II (95,310 women from 1991 to 2001). Their baseline diet assessment was updated every 4 years and during the follow-up. Only 173 women confirmed the onset of MS symptoms. Researchers found that Vitamin D supplement intake can reduce the risk of developing MS. The Vitamin D from food products was not investigated.[19]

Sarah's high fat diet draws one's attention to the healing effects of animal fat, honey, dates and sesame seed paste (tahini) for a newly diagnosed MS patient. Sarah attributes her health to multiple factors such as being approached with

compassionate care by Dr. JL, following a rich diet, continuing with warm oil massages, being physically active and using some vitamins and medications. Sarah's positive attitude and belief in getting well played a major role in her improvement. In conclusion, this case highlights the importance of compassionate care, being hopeful and faithful and continual search for better answers to manage MS.

Conflict of interest: None declared

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