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Takotsubo of the Nervous System

Ashlyn Augustine*; Hira Khan*; Carlos Fuentes Rosales, MD; M Ghanaat, MD

***Corresponding Author(s): Ashlyn Augustine & Hira Khan**
Wyckoff Heights Medical Center, 374 Stockholm St, Brooklyn, New York NY 11237
Phone: 718 963 2585; Email: ashlynaugustine94@gmail.com

Abstract

A sudden onset of signs and symptoms of Multiple Sclerosis (MS) triggered from an episode of severe emotional stress makes this case unique. Not enough research has been done to see the correlation between stress and development of new onset MS. Although this patient is 39 years of age, which falls under the typical age group for MS, 20-50, this patient presented rather uniquely. Most patients present with deteriorating neurological symptoms in relapsing – remitting patterns over period of months or years, however this patient had a stressful event one day and presented with severe neurological loss the next morning, which makes it highly likely that mental stress may have caused this. Additionally, the patient in this case report is from Ecuador, a country on the equator, which places herunder low risk of developing MS, since several studies shows a correlation between MS being more prevalent in northern latitudes that are furthest from the equator.

Keywords

multiple sclerosis; emotional stress; nervous system

Background

Multiple Sclerosis is an auto-immune demyelinating condition of the central nervous system (CNS). Scientists believe a combination of environmental and genetic factors can contribute to the risk of developing MS. Prolonged demyelination can cause axonal loss and clinically progressive symptoms, which can range from numbness of the extremities to vision loss and paralysis [1]. Solid research has been done to show how stress can induce relapses of MS and exacerbate its symptoms, but no research has been done to show the new onset of MS due to stress [2]. The following case report looks at a possible cause of stress induced MS.

Case Presentation

39-year-old Hispanic female came to the ER complaining of vomiting, tremor and diplopia. Upon

interviewing the patient, it was identified that she had undergone severe mental stress in the days following upto this onset of symptoms. The patient stated that she never had any medical illness prior to this, nor have any family history of auto-immune or neurological disorders. She suspected her symptoms were triggered by the stress. A thorough neurological examination was done and was significant for internuclear ophthalmoplegia. She was admitted for thorough neurology consult.

A CT of the head without contrast showed no acute intracranial hemorrhage, mass effect, or midline shift. MRI without contrast showed restricted diffusion in the proximal spinal cord. Axial T2/FLAIR sequence of the brain demonstrates hyperintense signal in the anterior forth ventricle subependymal region [Figure 1]. Sagittal T1 post-contrast sequence demonstrates focal enhancement in the region of the optic chiasm, and patchy peripheral enhancement in the proximal cervical spinal cord [Figure 2]. Sagittal STIR and T1 fat saturated post-contrast sequence of the cervical and thoracic spine demonstrated scattered foci of patchy enhancement [Figure 3]. All thesesigns are suggestive of active demyelination and a diagnosis of MS was made. Treatment was initiated with corticosteroids which resulted in significant improvement.

The patient then underwent previously scheduled myomectomy for uterine fibroids. Few days post-surgery, patient came back to the neurology team using a walker due to ataxia, along with worsening tremor, numbness of her extremities, and relapsing and remitting diplopia. It was suspected that added physical stress from the surgery must have exacerbated her condition. The patient was again admittedand given higher doseof oral and IV methylprednisolone which showed immense improvement. She was eventually discharged home with an adequate management and treatment plan with the neurologist.

Discussion

There are several reported cases of patients shown to have exacerbations of MS following stressful life events, but not enough reports have shown whether mental stress could increase the risk of developing the disease itself [2]. This case is a fine example of a patient newly diagnosed of MS preceded by mental stress.

A study done by University of Alberta found that 79% of the patients they interviewed reported stressful events two years prior to disease onset compared to 54% of the controls during a comparable period [3], and another study published by San Diego V.A Medical center reported similar findings for the 6 months preceding the onset of first symptom [4]. Several mechanisms have been proposed on the effect stress has in triggering MS, such as the insensitivity it causeson glucocorticoid and β-adrenergicreceptor modulation resulting in increased inflammation of CNS [1].

Although limited research has been done to see whether stress can lead to MS, research literature shows conflicting data [2]. However, our case is unique in that it supports the notion that stress can lead to MS. Studies can be done by taking a thorough history of the patient, giving much importance to the mental health. It's also important that we document the type of stressors; it's duration, frequency, and severity in order to get a better understanding for our future patients.

Figures

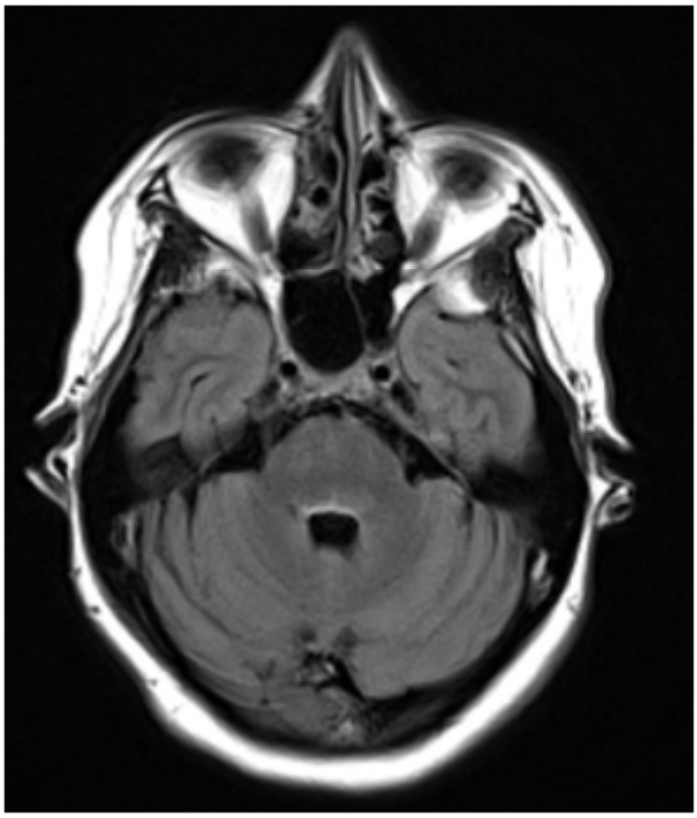

Figure 1: Hyperintense signal seen in the anterior fourth ventricle subependymal.

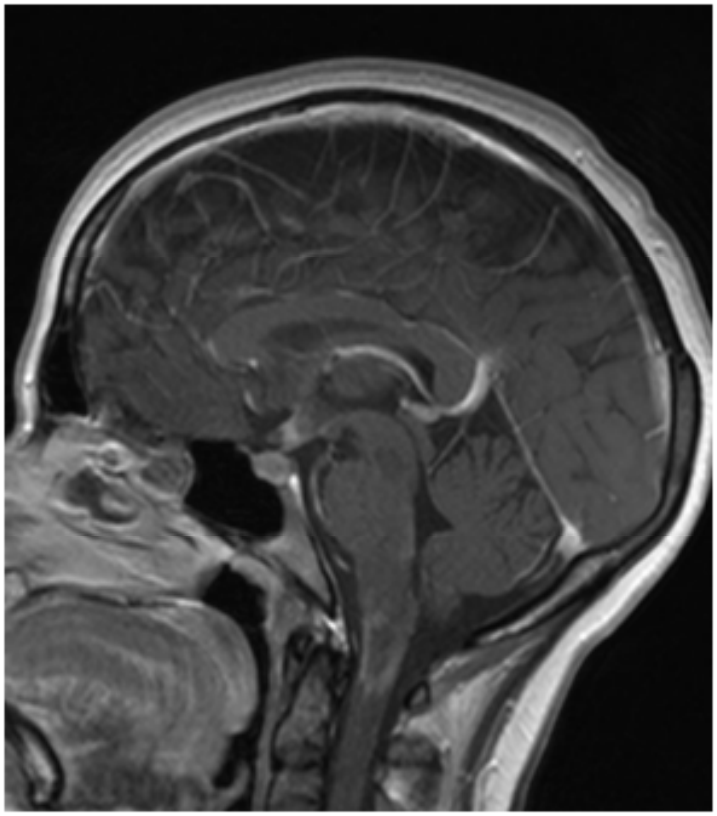

Figure 2: Focal enhancement of optic chiasm and patchy peripheral enhancement in the proximal cervical spinal cord.

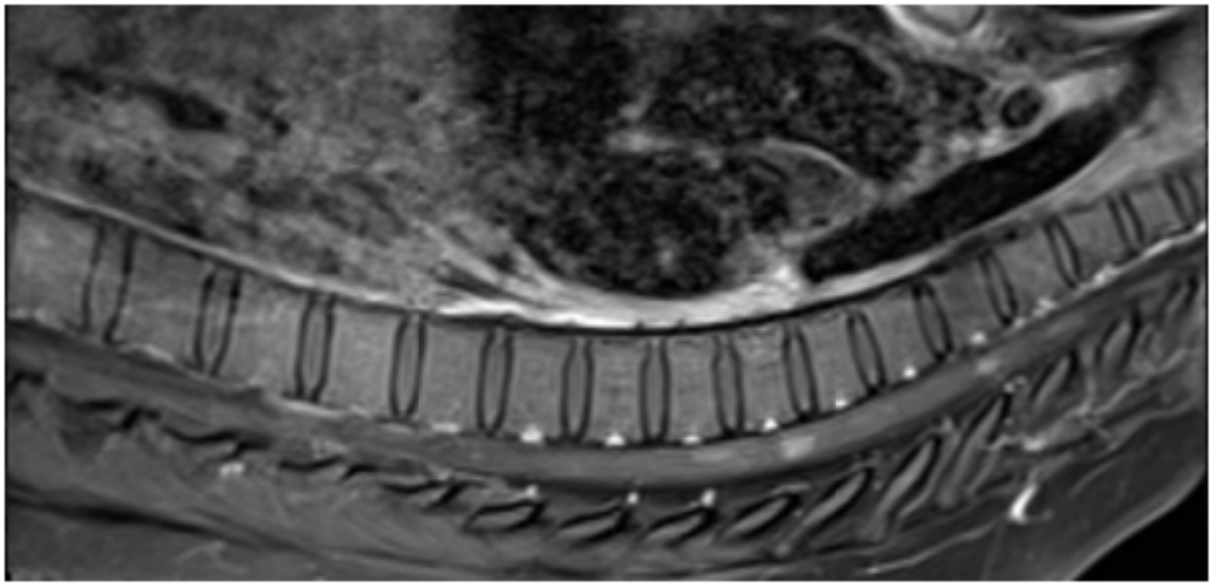

Figure 3: Scattered foci of patchy enhancement in the cervical and thoracic spine.