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Initial Multiple Sclerosis Diagnosis in the Emergency Department

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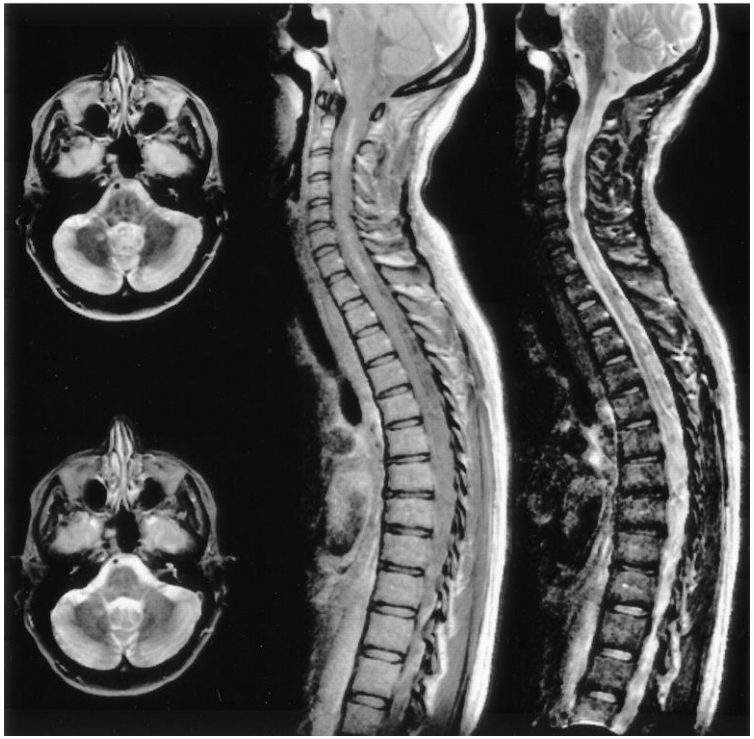
Introduction

Multiple sclerosis is a chronic autoimmune disease consisting of inflammation, demyelination and loss of axon integrity in the central nervous system. Like many autoimmune diseases, its severity, initial presentation and symptomatology vary. MS is typically onset in young adults between twenty to forty years old, and has been found two-three times more likely in women than in men. As a chronic illness, like many others, it can present in the emergency department as an undifferentiated neurologic complaint. This is a case report of new onset multiple sclerosis in the emergency department, outlining the importance of a broad set of differential diagnoses and benefit of MRI availability for evaluation of entirety of spinal cord in cases such as these.

Case Report

- 43 year-old female registered nurse presents to the emergency department with chief complaint of left lower extremity weakness and paresthesia. Her symptoms were gradually worsening since onset in the morning. She denies any back pain, trauma, bowel or bladder dysfunction, dizziness, trouble speaking or swallowing, syncope, trauma or any other complaints. She reports trouble ambulating secondary to this new extremity weakness. She adds that as a nurse, she often has to help transfer patients, which is taxing on her body. Four weeks prior, she presented to the emergency department complaining of bilateral upper extremity paresthesia and subsequently discharged from the emergency department after workup including CT head was unremarkable. She states after being discharged felt well for 4 weeks, then had these symptoms bringing her to the emergency department.
- Patient's history significant for working as an RN, and felt as though her leg weakness may be related to heavy lifting at work, however denying any back pain.
- Physical examination was significant for sensory deficit of anterior LLE, 2/5 flexion strength left hip and left knee, normal deep tendon reflexes, and abnormal gait.
- MRI of C, T, L spine with and without contrast completed showing multifocal intramedullary abnormality within cervical and upper thoracic segments of the spinal cord suspicious for demyelinating process with multiple foci throughout spinal cord suggesting similar in the lumbar spine at different stages.
- Disposition: Admitted for further evaluation of MRI head, IV solumedrol, and urgent neurology evaluation
- Inpatient course significant for MRI head showing no acute findings and lumbar puncture with CSF analysis consistent with demyelinating disease. She was discharged with neurology follow up in place.



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Discussion

A retrospective study in 2017 evaluated the positivity rate of demyelinating lesions in MRI brain imaging. They found that in patient's with eventual diagnosis of MS, lesions isolated to the spinal cord represented only 9.7% of positive cases, with remainder of positive cases having either lesions in the brain only or lesions throughout the entirety of the CNS. These findings in part led to the conclusion that spinal cord MRI was of limited value in the ED for rule out of and should not be utilized in the emergency department setting.

We believe however that in a new onset setting without any known history of MS and if clinical suspicion remains high, patients would benefit from treatment of an acute MS exacerbation, and therefore spinal MRI is of value. In our case, while MS was in consideration, MRI of the brain was not obtained as lumbar disc disease was the suspected diagnosis, given the patient's occupation as a nurse. If brain MRI was instead chosen, the patient would likely not have had expeditious intervention and treatment.

Conclusion

In cases consisting sporadic neurological symptoms concerning multiple sclerosis, it may be best to obtain MRI of spinal cord instead of the brain alone. This is the most reliable method of ruling out demyelinating disease.