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A 32-Year-Old Male with Unsteady Gait

Urgent message: Early diagnosis and management of multiple sclerosis are crucial for long-term prognosis. Urgent care providers must be vigilant with proper history taking and thorough physical examination when looking for signs and symptoms of early MS.

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Introduction

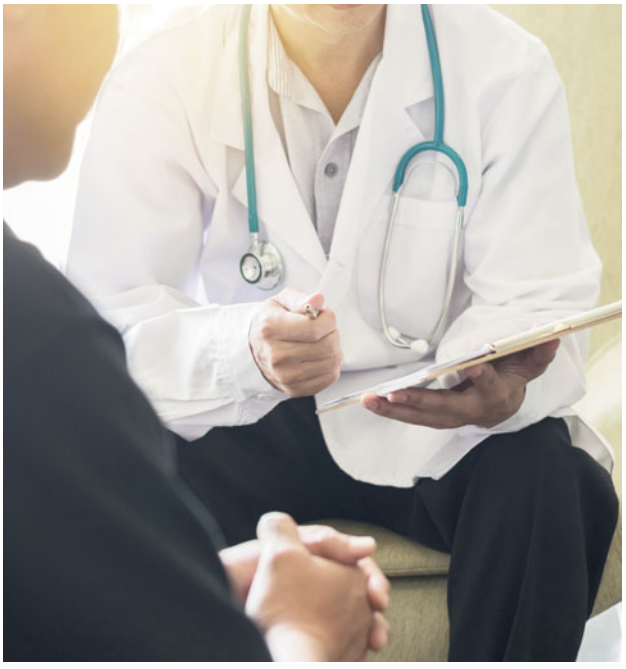
In the early course of multiple sclerosis (MS), the initial symptoms are nonspecific and intermittent, which makes the diagnosis challenging.[1] Focusing on common symptoms and considering the diagnosis will direct the evaluation. Common symptoms include coordination abnormalities, weakness and/or numbness of the extremities, loss of bladder control, and visual disturbances.

Assessing the nervous system requires more directed questioning. Asking about head trauma/injury, loss of consciousness, unsteady gait, vision loss, double vision and headaches, syncope, vertigo, dysphagia, speech, coordination disturbances, numbness or tingling, and weakness or paresthesia is important to making the diagnosis.

Case Presentation

A 32-year-old male presented with right ankle pain after falling out of a truck. He rated the pain a 4 out of 10 in intensity and the pain was worse with range of motion. Further questioning revealed that the patient had been feeling unsteady for 3 months prior to his visit, with loss of balance and recurrent falls. In addition to the unsteady gait, the patient had 60 pounds of unintentional weight loss. He denied numbness or weakness in his extremities; slurred speech; facial droop; confusion; and head/neck chest, abdomen, or back pain. He denied having any fever, blurred vision, rhinorrhea, cough, hematuria, melena, bruising, rashes, lower extremity pain, or tenderness.

Further exploration of the past history revealed that he had presented to an emergency department 3 weeks previously for similar complaints and was discharged after CT scan of the head did not show any intracranial pathology. The patient had no other significant past medical history. Surgical history included titanium hip replacement. Family history was noncontributory and social history included daily use of marijuana and occasional alcohol use.



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On examination, the patient was well appearing, awake, and alert x 4. The initial blood pressure was 148/64 mmHg, heart rate 51 beats/min, and a temperature of 97.8°F. The eye exam revealed PERRLA, EOMI, without scleral icterus. Neck was supple without rigidity or lymphadenopathy. The cardiovascular exam revealed regular rate and rhythm without murmurs, rubs, or gallops. Neurological exam revealed cranial nerves II-XII intact. Sensation intact. Strength was 5/5 for flexion and extension in all four extremities. Deep patellar tendon reflexes are equal and intact. Finger-to-nose testing is equal and normal bilaterally. The laboratory was all within normal limits.

Differential Diagnosis and Medical Decision-Making

The secondary complaints of unsteady gait and 3 months of unintentional weight loss raised the provider's concern for:

- brain neoplasm
- myelopathy
- stroke
- vertebrobasilar insufficiency
- vestibular disorders
- multiple sclerosis
- encephalitis
- acute disseminated encephalomyelitis
- transverse myelitis
- sarcoidosis
- Wernicke's encephalitis
- subacute combined degeneration of the spinal cord
- megaloblastic anemia

At an outside hospital, a CT scan of the brain was performed but was inconclusive for any acute intracranial pathology, making a large mass unlikely. Primary or metastatic malignancy typically presents with focal neurological deficits, but our patient did not have these findings, making the diagnosis of neoplasm unlikely. The patient did have a laboratory work-up later which did not reveal leukocytosis and the erythrocytes sedimentation rate and C-reactive protein were within normal range. Measurement of vitamin B12, folate, thiamine, and vitamin D level was also within normal limits. He was afebrile.

With these findings, we can further rule out many of the inflammatory, infectious, or nutritional etiologies listed previously. For this reason, a lumbar puncture was not performed. Since the patient previously had multiple falls which caused him significant disability, an MRI was performed to look for intracranial pathology, including sarcoidosis and multiple sclerosis.

Clinical Pearls

1. Multiple sclerosis can have varying and confusing presentations, with symptoms and signs including coordination abnormalities, weakness and/or numbness of the extremities, loss of bladder control, and visual disturbances.
2. An MRI has a diagnostic sensitivity of 94%, with a specificity of 83%.
3. Multiple treatment options are available; early diagnosis and intervention increases chances for a favorable outcome.

Case Resolution

Though the initial presentation was an ankle sprain, the elicited history of imbalance and weight loss were concerning. The MRI showed moderately extensive periventricular white matter changes and mild deep gray matter changes suggesting demyelination. The patient was admitted for further evaluation for possible MS.

Discussion of Multiple Sclerosis

Multiple sclerosis is the most common immune-mediated demyelinating disease of the central nervous system and a major cause of disability in young individuals, both physically and cognitively. The demyelination causes inflammation to the white matter, damaging the nerve sheath. This results in axonal degeneration and miscommunication between the central nervous system and the peripheral nervous system.

MS causes a range of signs and symptoms, including physical, cognitive, and behavioral. The common features in order of highest incidence are:

- Numbness in different parts of body (most common initial symptom), paresthesia
- Gait disturbances
- Unilateral vision loss (optic neuritis), diplopia
- Weakness, focal as well as generalized, leading to paralysis
- Cognitive symptoms
- Generalized pain
- Urinary symptoms, bladder bowl incontinence

The physical signs of MS are nonspecific. A longitudinal study was performed looking at the first 10 years of relapsing/remitting multiple sclerosis (RRMS), specifically at memory, information processing, and executive functions. Even with no impact on physical disability, patients show an increase in frequency and severity of cognitive impairment in the first ten years.[3]

In a patient presenting with possible MS, an early diagnosis facilitates the best management. The most reliable imaging is a magnetic resonance imaging (MRI),[4] as was

Prevalence of Multiple Sclerosis by Age and Sex in the United States				
	Female	Male	Overall	
Age group (yrs)	Rate/100,000 (95% CI)	Rate/100,000 (95% CI)	Rate/100,000 (95% CI)	Female:Male ratio
0–4	0.2	0.2	0.2	1.04
5–9	1.3	0.9	1.1	1.40
10–14	3.4	1.2	2.3	2.77
15–19	22.3	7.2	14.6	3.11
20–24	59.7	21.2	40.1	2.82
25–29	193.0	65.3	130.7	2.95
30–34	294.3	95.6	198.6	3.08
35–39	415.2	126.7	275.4	3.28
40–44	428.2	134.9	286.2	3.17
45–49	455.6	139.7	303.5	3.26
50–54	388.7	130.6	265.1	2.59
55–59	295.9	103.9	204.2	2.85
60–64	151.0	59.1	107.4	2.55
65–69	106.8	45.6	75.7	2.34
70–74	81.7	35.1	60.0	2.32
75–79	53.4	26.0	40.2	2.05
80–84	16.3	8.4	13.1	1.93
≥85	na	na	na	na
Overall	224.2	71.6	149.2	3.13

CI, confidence interval; na, not applicable
Data source: Dilokthornsakul P, et al. Multiple sclerosis prevalence in the United States commercially insured population. *Neurology*. 2016;86(11):1014-1021.

done in this case. The sensitivity of diagnosing MS within the first year after a single attack is 94%, with a specificity of 83%.[5] Sometimes, an abnormal MRI requires confirmation with CSF analysis like oligoclonal IgG bands, and other immune markers like IgG. Diagnosis at times can be difficult, usually requiring an MRI and CSF analysis.

Treatments for MS are aimed toward managing symptoms and modifying the disease course.[7] For an acute exacerbation, the mainstay for MS is corticosteroids to help reduce the inflammation.[8] Disease-modifying therapies have been shown to reduce inflammation and relapses, and slow the accumulation of brain lesions on MRI, thus slowing down the overall progression of the disease. Injectable intramuscular and subcutaneous therapies include interferon beta and glatiramer acetate. The most common side effects of interferons include injection-site reactions, flu-like symptoms, anemia, leukopenia, and depression. Potential for hepatotoxicity exists, but it is rare.

Case Summary

It would have been easy for the provider to simply focus on the ankle pain, interpret imaging, then splint and discharge with symptomatic management, but the deeper dive into the reason for the strain was what unmasked symptoms which were eventually found to be due to MS. This diagnosis facilitated earlier therapy, likely improving the ultimate outcome. ■

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