Pseudobulbar affect—such as pathological laughter or crying—is associated with several different neurologic diseases and is most frequently seen in patients with Alzheimer disease. However, many physicians do not recognize it as a symptom associated with multiple sclerosis. The present report describes a case of pathological laughter in a 56-year-old man who was diagnosed as having multiple sclerosis 20 years earlier.

Laughter is a basic human expression that has been touted as a stress-reducer and complementary therapy for patients. In fact, some preliminary studies and review articles have linked increased laughter among patients to improved immune system function and outcomes. However, it is important to distinguish everyday laughter, which is an expression of emotion, from pathological laughter, which is a disorder of expression and a sign of a neurologic condition.

Pathological laughter and crying, as well as other emotional displays (eg, smiling), are manifestations of pseudobulbar affect. These symptoms, which can coexist, are associated with conditions such as Alzheimer disease, amyotrophic lateral sclerosis, and stroke. However, pseudobulbar affect may also occur in patients with multiple sclerosis (MS).

It has been postulated that in MS, pseudobulbar affect results from a loss of inhibition related to higher cortical function or lesions in specific regions of the brain. Although these symptoms are usually easily recognized by neurologists, they may go unrecognized by other primary care physicians.

The present report describes a patient with pathological laughter and serves to illustrate a seemingly harmless symptom as a sign of neurologic disease. A brief discussion of the medical literature is also provided.

Report of Case
A 56-year-old man with a dominant right hand presented to a local hospital emergency department because he was having difficulty walking. He received a tapering dose of prednisone, which slightly improved his symptoms. However, within 2 days, his symptoms worsened again.

Two weeks later, the patient presented to a neurology office with complaints that he could not ambulate for 2 weeks. On relating his medical history to a neurologist (C.H.), the patient reported that approximately 20 years ago, he had an episode of weakness in his left leg. He had presented to his primary care physician, who diagnosed MS. The physician prescribed medication (unknown by the patient), and the patient's symptoms improved. The patient was on the medication for what he described as a “short time.” No further diagnostic intervention or treatment had been provided.

In addition to the patient’s history of MS, he had hypercholesterolemia and hypothyroidism, for which he was taking simvastatin (20 mg) and levothyroxine sodium (112 μg), respectively. He had no known drug allergies.

On physical examination, the patient's blood pressure was 132/60 mm Hg; heart rate, 100 beats per minute; and weight, 142 lbs. The patient was pleasant and cooperative, and he followed commands and answered questions appropriately. However, while he was describing a recent fall that occurred while walking his dog, the patient broke into an uncontrollable laughter. He laughed so hard that his eyes began to tear, and he could not stop laughing for several minutes. Several such laughing fits occurred throughout the visit without any apparent stimulus. His wife remarked that “he was never like this before.”

On examination of the cranial nerve, the patient had no afferent pupillary defect (Marcus Gunn pupil), internuclear ophthalmoplegia, nystagmus, or facial asymmetry. Extraocular eye movements were intact. He had a good shoulder shrug. The patient had normal motor skills, good muscle bulk and tone, and strength in all four extremities. The rest of the neurologic examination revealed that the patient had difficulty with ambulation because of ataxia, which caused him to lean to one side.

Pseudo
side and resulted in a tandem gait. He had impaired vibratory sensation in his feet, and his joint position sense was slightly impaired in his toes. Results from an electroencephalography were normal and without evidence of gelastic epilepsy.

The patient received 500 mg/d of intravenous prednisone as an outpatient for 4 days. His episodes of pathological laughter decreased in frequency but did not resolve completely. Selective serotonin reuptake inhibitors were discussed as a treatment option for the patient’s periodic episodes of pathological laughter, but the patient declined further treatment.

Follow-up magnetic resonance imaging taken 6 weeks after presentation revealed periventricular white matter lesions and “Dawson fingers” (Figure), which are consistent with MS.

Comment
A search of the terms MS and laughter, pathological laughter and MS, and pseudobulbar affect and MS on the National Library of Medicine’s PubMed database yielded few studies. However, one study9 suggested that pathological laughter may occur in up to 10% of patients with MS.9

According to Feinstein et al,9 patients who have severe physical disabilities and chronic MS are more likely to present with pathological laughter that those with minor disabilities and recently diagnosed MS. However, de Seze et al7 described four cases of pathological laughter occurring in patients with early-onset MS. A search of the medical literature also suggests that cases of pathological laughter are less common than other forms of pseudobulbar affect, such as pathological crying or smiling.

Just as the characteristics and prevalence of pathological laughter in MS are generally unknown, so are the causes of this disorder. Traditionally, pathological laughter and crying have been suspected to result from damaged pathways in the cerebral cortex that control motor movement.12 In the presence of MS, lesions of the frontal lobe, pons, and cerebellum have been implicated as a possible cause for pseudobulbar affect.7,8 As the debate progresses, it is clear that further neurologic testing will be needed before any consensus is reached.

As in the present report, pathological laughter and crying may improve after the underlying condition is managed.3 However, other pharmacotherapeutic options are available if symptoms persist. One study13 related the rapid resolution of pathological laughter and crying after the administration of selective serotonin reuptake inhibitors. Likewise, antidepressants have been reported to relieve these symptoms.14 Further research into treatment modalities is needed to ensure that patients with pathological laughter, regardless of the underlying neurologic condition, can benefit from improved quality of life.

Conclusion
As described in the present report and previous studies,7-11 pathological laughter can occur in patients with MS. Although much remains to be learned about pseudobulbar affect, the symptoms, which can have a substantial impact on patient quality of life, should not be overlooked by physicians.

Figure. Magnetic resonance imaging of a 56-year-old man with multiple sclerosis who had several episodes of pathological laughter. The images reveal (A) periventricular white matter lesions and (B) the classic “Dawson fingers” projecting up from the corpus callosum. These findings are consistent with multiple sclerosis.
References


