Similar to people with other diseases that affect the central nervous system (for example, Alzheimer’s disease, stroke, traumatic brain injury, amyotrophic lateral sclerosis), individuals with MS can experience episodes of uncontrollable laughing and/or crying (Minden et al., 2003). This phenomenon has been variously referred to in the literature as pseudobulbar affect (PBA), pathological laughing and crying, emotional lability, emotional incontinence, emotion-alism, and involuntary crying.

PBA is characterized by involuntary displays of crying and/or laughing, typically without any associated feelings of sadness, depression, or euphoria. While such feelings may be present in some cases, the crying and/or laughing are difficult or impossible to control, more intense than would be expected, and not clearly related to the underlying mood. In short, the crying and laughing of PBA is not within voluntary control and is inappropriate to external circumstances and internal mood states. The emotional toll of such symptoms, both on people with MS and their family members, friends, and colleagues, tends to be quite high. Patients can experience significant embarrassment over this behavior, as well as anticipatory anxiety about future episodes (Green & Bernat, 1999); family members and others find the behavior frightening and puzzling at best.

ETIOLOGY

While the precise etiology is unknown, the occurrence of PBA has been associated with diffuse, bilateral, cerebral involvement that interrupts the corticobulbar tracts involved in the control of emotional expression (Davison & Kelman, 1939; Langworthy & Hesser, 1940; Ironside, 1956; Black, 1982). Psychometric testing of individuals with confirmed PBA has suggested that the syndrome may be mediated, at least in part, by damage to the prefrontal cortex (Feinstein, 1999).
PREVALENCE

Prevalence estimates of PBA in MS have ranged from 7% to 95%, depending on terminology, diagnostic criteria, and populations being studied (Feinstein, 1997). Using criteria established by Poeck (1969)—sudden loss of emotional control (crying or laughing or both) on multiple occasions over one month, which occurs in response to nonspecific stimuli and lacks an associative, matching mood state—Feinstein and his colleagues (1997) obtained a point prevalence of 10% in a clinic sample that was representative of a large, community-based sample of MS patients. This 10% prevalence rate is similar to that proposed by Langworthy et al. (1941) and Surridge (1969), but significantly lower than that previously suggested by others (Cottrell & Wilson, 1926; Pratt, 1961; Sugar & Nadell, 1943), presumably because the strict diagnostic criteria utilized in the study helped to differentiate those with PBA from the larger numbers of patients exhibiting non-specific emotional lability.

RELATIONSHIP TO OTHER DISEASE FACTORS

In their case-controlled study matching MS patients with confirmed PBA with MS patients without PBA on age, gender, level of physical disability, duration of MS, and premorbid IQ, Feinstein and his colleagues (1997) found that PBA occurred equally among men and women and tended to be associated with more progressive disability and greater intellectual impairment. Patients with PBA had greater brain lesion volume than similarly disabled patients without PBA, but those with PBA were no more depressed than those without.

DIAGNOSIS

Prompt and accurate diagnosis is important in order to provide the appropriate medical treatment for the person with MS as well as education and support for the patient and family. A comprehensive clinical assessment consists of a thorough history, detailed characterization of the episodes of crying and/or laughing, and complete medical, neurologic, and mental status examination.

Two instruments designed to facilitate the diagnosis of PBA have been validated in populations other than MS. The Pathological Laughing and Crying Scale (PLACS), a clinician-administered interview, quantifies several aspects of laughing and crying episodes, including their duration, relationship to external events, degree of voluntary control, inappropriateness in relation to concurrent emotions, and extent of distress following the episode (Robinson et al, 1993). The PLACS has since been used in studies of MS patients (Feinstein et al., 1997).

The Center for Neurologic Study–Lability Scale (CNS–LS), is a self-report measure of affective lability developed by Moore and colleagues (Moore et al., 1997). The scale reliably quantifies patients’ perceptions of several aspects of PBA episodes, including frequency, intensity, lability, degree of voluntary control, and inappropriateness to context. The CNS–LS, which was initially developed for use in patients with ALS, has since been used to study patients with MS (unpublished report).
TREATMENT INTERVENTIONS

To date, the management of PBA has relied primarily on antidepressant medications. Schiffer and colleagues (1985) compared amitriptyline and placebo in a double-blind crossover study of 12 patients with MS. Eight of the patients improved dramatically on an average dose of 57.8 mg per day. Confirming the disassociation between PBA and mood, the improvement occurred without any concomitant change in various measures of mood. In other patient groups, success has been reported with levodopa (Wolf et al., 1979; Udaka et al., 1984), desipramine (Poeck, 1969), and fluoxetine (Seliger et al., 1992). A study of fluvoxamine (100 mg) reported improvement in 10 patients with amyotrophic lateral sclerosis, MS, or stroke; within 2–6 days the number of emotional outbursts decreased from 30 to 5 or fewer per day (Iannaccone & Ferini-Strambi, 1996).

Trials sponsored by Avanir Pharmaceuticals are underway to evaluate Neurodex™, a patented, orally-administered combination of dextromethorphan and an enzyme inhibitor to sustain a therapeutic level of dextromethorphan. Neurodex is being developed to treat PBA in patients with neurological disorders, including MS, amyotrophic lateral sclerosis, Alzheimer’s disease, and stroke.

REFERENCES


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