

TREATMENT OF EMOTIONALISM WITH FLUOXETINE DURING REHABILITATION

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ABSTRACT. Emotionalism (emotional lability) is a common but distressing phenomenon that occurs frequently in individuals suffering cerebral vascular accidents and other brain diseases. Patients with emotionalism sometimes embarrass their families and themselves, becoming socially disabled despite normal physical function. At its worst, emotionalism interferes with rehabilitation programs, delays progress and sometimes makes these programs impossible. This paper reports the effect of fluoxetine in treating three patients with persistent emotionalism (2 cases following cerebrovascular accidents, 1 case following encephalitis). All 3 patients demonstrated dramatic improvement in emotionalism within 6 days of treatment. The severity, frequency and duration of each episode were reduced greatly. The treatment improved the effectiveness of the rehabilitation program, relieved patient and family embarrassment, and enabled patients to resume rapidly their previous lifestyle patterns. All patients reached the functional goals planned prior to the onset of rehabilitation. We conclude that fluoxetine is highly effective in treating the symptoms of emotionalism in all patients, and allows for recovery of both physical and social function.

Key words: emotionalism; fluoxetine; rehabilitation.

INTRODUCTION

Emotionalism is a behavioural syndrome referring to involuntary outbursts of weeping, grimacing or, more rarely, laughing, which are generally provoked by trivial stimuli without a corresponding mood. This phenomenon is widely recognized as a symptom occurring in various brain diseases such as stroke, traumatic brain injury, multiple sclerosis, amyotrophic lateral sclerosis, epilepsy and central pontine myelinolysis

(10, 12, 20, 22). The incidence of emotionalism in stroke patients was reported to be 15% in the first month following stroke, 21% in 6 months, and 11% after 1 year (7).

Caregivers as well as patients describe the symptoms of emotionalism as distressing and socially embarrassing. The unexpected outbursts of pathological crying or laughing often complicate patients' interactions with others. Patients may be considered depressed, without motivation for rehabilitation, and thus may miss opportunities to become more independent.

There is no consensus on the most effective management for emotionalism; most patients remain untreated. Typical management strategies appear to be insufficient. Physicians are often unable to provide therapeutic strategies and can only reassure patients that the severity of the attacks may diminish with time. In 1969, Lawson & MacLeod (9) first described the therapeutic effect of imipramine in diminishing the symptoms of emotionalism. Since then, many medications including levodopa, amantadine (21), thyrotropin-releasing hormone (TRH) (8), tricyclic antidepressant (17) and selective serotonergic reuptake inhibitors (SSRI) (3, 18, 19) have been used to control the symptoms of emotionalism, but with variable results. Most reports focused on the decreased severity and frequency of emotionalism following medication, but few have mentioned how the treatment influences the patients' functional level, advances rehabilitation training, or normalizes their social lives.

Here we present our experiences in treating emotionalism in three patients (two who suffered strokes, one who suffered from encephalitis) whose symptoms greatly disturbed their rehabilitation programs. For all three patients, fluoxetine therapy not only diminished symptoms of emotionalism, but also smoothed the course of rehabilitation and improved functional performance. Therapeutic efficacy was measured by the modified Lawson & MacLeod emotionalism rating scale (9, 18) (Table I).

Table I. The modified Lawson & MacLeod "emotionalism" rating scale

Grade	Emotional reaction
8	Crying/laughing spontaneously or provoked by trivial things, e.g. sweeping the floor
7	Crying/laughing provoked by an initial introduction, e.g. "good morning" or "hello"
6	Crying/laughing provoked by a natural conversation, e.g. the weather
5	Crying/laughing provoked by an emotive conversation, e.g. close family, etc.
4	Facial distress or grimace spontaneously or provoked by trivial things
3	Facial distress or grimace provoked by an initial introduction
2	Facial distress or grimace provoked by a natural conversation
1	Facial distress or grimace provoked by an emotive conversation
0	No emotionalism throughout

MATERIAL AND METHODS

Patients

Three inpatients of the rehabilitation department in whom either cerebrovascular accident or encephalitis associated with exhibiting emotionalism were diagnosed received treatment with fluoxetine. In all three, the responses were dramatic and effective within 6 days of initiation of therapy. All patients experienced a recurrence of emotionalism after discontinuing fluoxetine. They resumed fluoxetine treatment, and again sustained a dramatic remission of symptoms. The improvement assisted the progression of their rehabilitation programs. The results of treatment are summarized in Table II.

Case 1

A 59-year-old right-handed man was admitted to the rehabilitation department to receive training in activities of daily living and ambulation after his third episode of stroke. He had suffered from 2 episodes of stroke, leading to a left hemiplegia, in 1983 and 1991. After the second event, he was observed to have severe, intermittent and uncontrollable crying attacks without obvious reason, but no management for these attacks had been administered. In 1994, he sustained his third episode of stroke with sequelae of mild right hemiparesis, exaggerated crying and left hemiplegia from his previous strokes.

On admission, neurological examination indicated that the patient had intact memory, orientation and judgement abilities. Although neither dysphagia nor aphasia was observed, spastic dysarthria was present. He had a severe left spastic hemiplegia and mild right hemiparesis. Psychiatric consultation ruled out the possibility of depression. Magnetic resonance image (MRI) of the brain demonstrated multiple infarctions over bilateral basal ganglion, pons, and the head of the right caudate nucleus.

His symptoms of emotionalism were completely unpredictable, occurring either spontaneously, or triggered by certain events, such as something related to his family or his rehabilitation program. The emotionalism greatly interfered with his rehabilitation sessions, as the therapist had to stop training during each crying attack. The other patients who shared the same rehabilitation space complained that his crying attacks were annoying and expressed concern that his behaviour might negatively influence their rehabilitation.

Fluoxetine, 20 mg/day, was prescribed to treat his emotionalism. On the sixth day of medication his symptoms improved greatly. He was observed to have only occasional episodes of facial distress and to be better able to co-operate with therapists. The medication was discontinued 10 days later because his symptoms became insignificant. However, the emotionalism recurred within 1 week after stopping fluoxetine treatment, and the drug was resumed but was less effective at reducing symptoms. The dose was therefore increased to 40 mg, and he regained satisfactory remission, as previously, within 1 week.

On the fourth day of fluoxetine therapy, the patient experienced nausea and epigastralgia. However, his symptoms

Table II. Effects of treatment with fluoxetine

Patient	Emotionalism scale ^a		Frequency ^d		Duration ^d		Final functional outcome
	Pre-med ^b	Post-med ^c	Pre-med	Post-med	Pre-med	Post-med	
1	8	1	5/hour	1/hour	30-40 seconds	10-20 seconds	walk with a quadricane heavily hygiene dependent
2	7	1	20/hour	4/day	20-30 seconds	10-15 seconds	walk with a quadricane take food by mouth
3	8	4	10/hour	3/hour	1 minute	< 5 seconds	walk with a cane take food by mouth

^a Modified Lawson & MacLeod emotionalism rating scale.

^b Pre-med: before medication.

^c Post-med: after medication.

^d Frequency and duration were estimated by nurses or caregivers.

subsided spontaneously the next day and no similar complaint was noted in follow-up.

At discharge he had achieved the planned rehabilitation goal of ambulation ability with a quadricane.

Case 2

A 66-year-old right-handed man with a history of ischemic stroke, hypertension, diabetes mellitus and chronic renal insufficiency was admitted to the rehabilitation ward in order to take part in a general reconditioning program and to receive swallowing training because of preceding aspiration pneumonia. The patient had sustained right hemiparesis, dysphagia, global aphasia and emotionalism following an ischemic stroke 16 years ago.

Two weeks before his admission he had suffered from an episode of aspiration pneumonia which was soon controlled by parenteral antibiotics. On examination he expressed severely impaired communication ability. He could only follow one-step orders, and pronounced stereotyped meaningless sounds. He had a delayed swallowing reflex and inadequate laryngeal elevation that made his swallowing unsafe. MRI of the brain revealed old infarctions in the left ventral pons and the left temporo-occipital area. His emotionalism was so severe that he lapsed into unexpected crying with tears when someone said "hello" to him or mentioned his family. The therapists reported that his emotionalism disturbed their training programs greatly. Fluoxetine, 20 mg/day, was prescribed; his emotionalism improved, with only transient facial distress occurring on the fourth day of treatment.

After this improvement in symptoms the patient was able to participate in his assigned rehabilitation course effectively without interruptions due to emotionalism. Following 3 weeks of training, he could eat a semi-liquid diet safely with the Mendelsohn manoeuvre and walk with the assistance of a cane. Fluoxetine therapy was discontinued after 3 weeks. However, his symptoms returned to their state at admission within 1 week. We therefore resumed fluoxetine treatment at 20 mg/day, and again it reduced the symptoms satisfactorily. During his hospitalization, the patient tolerated fluoxetine well without adverse effects.

Case 3

A 48-year-old woman who had been treated for viral encephalitis was admitted for training in independent ambulation, performance of activities of daily living and safety swallowing. On admission, physical examination revealed drowsy consciousness, a fever of up to 38.8°C, and neck stiffness with Brudzinski's sign. Cerebrospinal fluid pressure was elevated and CSF samples had normal protein levels and negative bacterial culture. MRI of the brain revealed multiple small mass lesions characteristic of encephalitis located in the brainstem, right temporal lobe, left striatocapsular regions, and periventricular white matter. She was treated with empirical antibiotics and acyclovir. One month later she regained consciousness with sequelae of weakness in the limbs, severe dysarthria, dysphagia and emotionalism.

In the rehabilitation ward, she exhibited decreased muscle power, increased deep tendon reflexes of both limbs and bilateral frozen shoulders. A moderate degree of spasticity and dysmetria were also found. She required significant assistance to stand up. She suffered from impaired lingual control and delayed swallowing reflex and was fed by nasogastric tube. She had frequent uncontrollable episodes of inappropriate laughing

and crying spontaneously or when touched. The emotionalism interrupted her swallowing training and therapeutic exercise, making it impossible to proceed with her rehabilitation program. Fluoxetine, 20 mg/day, was prescribed to reduce her emotionalism. Six days after the beginning of therapy her emotionalism improved greatly. She could attend the rehabilitation program without any interruption from emotionalism. The emotionalism recurred 6 days after discontinuing fluoxetine therapy; treatment was resumed with the dosage of 20 mg. Her symptoms were again reduced to the same levels as during initial treatment.

After 2 months of rehabilitation she was able to take food by mouth and walk with a cane.

DISCUSSION

Emotionalism has been recognized as a common manifestation of central nervous system lesions since the late nineteenth century. Many terms have been used to describe this phenomenon, including emotional lability, emotional incontinence, pathological crying and/or laughing, pseudobulbar effect and emotionalism (1). It was determined that a structural pathology of the central nervous system induced dissociation between the affective display and the affective sensation (16). As with our patients, the severity and frequency of laughing or crying usually greatly exceeds an appropriate emotional response to the provoking event. However, there is still much debate about the clinical definition and criteria necessary to make a diagnosis.

The neuroanatomical pathway of emotions such as crying and laughing is poorly understood. Wilson (23) speculated that a supranuclear pontobulbar facio-respiratory centre exists in the thalamus, subthalamus and hypothalamus, connecting with the facial nucleus in the pons, nucleus ambiguus in the medulla and phrenic nuclei in the upper cervical cord. These neural systems may co-ordinate the facial and respiratory movements of laughing and crying. Lesions of voluntary motor control in this "faciorespiratory" centre, as in pseudobulbar palsy, may induce emotionalism. Poeck (13) reported that lesions in the internal capsule with involvement of basal ganglia, substantia nigra, cerebral peduncle, caudal hypothalamus, thalamus and bilateral lesions of the pyramidal tract, may result in emotionalism. According to a study by Davison & Kelman (6), the pathological findings of 33 autopsies of patients with emotionalism were so widespread in the brain that it was of little value to attempt to localize the structures responsible for this phenomenon. In our clinical experience, the lesions causing emotionalism are generally widespread and bilateral in areas including the pons, basal ganglion and periventricular white matter. However, Ceccaldi et al.

(5) reported that unilateral lesion produces emotionalism.

Ross & Stewart (15) postulated a new theory to explain the possible pathogenesis of emotionalism based on neurotransmitter function. They postulated that these extreme non-volitional affective displays are probably organized by the temporal limbic system and basal forebrain via the diencephalic periaqueductal gray-habenular-biogenic amine-descending motor system. This limbic motor area-descending pathway uses norepinephrine and serotonin as neurotransmitters. The theory implies that the mechanism underlying emotionalism is both structural and neurophysiological. Hence emotionalism may be caused by diverse structural (anatomical) lesions that result in neurophysiological (neurotransmitter) brain disturbance by derangement of the biogenic amine system. As a result, pharmacological treatment is potentially of therapeutic value.

Many clinical trials have been performed which examined the efficacy of therapies to ameliorate emotionalism, including administration of levodopa, amantadine (21), amitriptyline (17) and nortriptyline (14). Although levodopa and tricyclic antidepressants have been successful, selective serotoninergic reuptake inhibitors (SSRI), including citalopram and fluoxetine, have produced more satisfactory results (3, 18, 19). These findings were confirmed by our treatment results. The accumulated data suggests that the serotoninergic system in the brain may play an important role in symptoms of emotionalism.

An animal study found that 5HT receptors were present in the facial motor nuclei, and that 5HT plays a facilitatory role (11). Enhancement of synaptic serotonin levels might strengthen modulation of the affective display. It has been hypothesized that medication may manipulate the biogenic amine concentration and act directly on the synaptic activity of the "limbic" motor system at the level of the motor neuron or interneuron (2). This effect would explain the immediate response of emotionalism to tricyclic antidepressants, citalopram and fluoxetine. In our patients, objective as well as subjective results were favourable within 6 days of fluoxetine administration. Our results indicate that fluoxetine may help to alter the natural course of emotionalism, in contrast to the lack of improvement in patients without treatment in observations by House et al. (7).

Early rehabilitation intervention after a cerebrovascular accident or brain lesions is invaluable to prevent complications such as intellectual deterioration, disuse

weakness, joint contracture, pressure sores and shoulder-hand syndrome, all of which might significantly increase the duration of hospitalization and make subsequent rehabilitation difficult. Although the intensity and frequency of emotionalism may diminish appreciably with time in most patients, ameliorating their inability to control emotionalism helps to speed progress in the rehabilitation program. For patients like ours with persistent emotionalism, which did not diminish with time and which did disturb rehabilitation programs, medication could be considered. Our patients reported that they felt guilty and awkward while crying in the rehabilitation room, and were extremely pleased with the dramatic remission of symptoms that had persisted for a long time. Nurses and therapists were also pleased that fewer episodes of emotionalism interfered with the rehabilitation program after medication enabled them to carry out their treatment more easily and effectively.

The common adverse effects of fluoxetine are nausea, nervousness, vomiting, insomnia, headache, tremor, anxiety and diarrhoea. Only 2–4% of patients taking fluoxetine need to discontinue the medication because of side effects of nausea, nervousness and vomiting (4). In comparison to other drugs that have been tried clinically to ameliorate emotionalism, such as tricyclic antidepressants and levodopa, fluoxetine is free of anticholinergic and cardiovascular side effects. Therefore it may be more suitable than other medications for administration to aged and clinically fragile patients. One episode of nausea and epigastralgia occurred in the first patient of our series during the course of treatment; his temporary symptoms were probably caused by fluoxetine.

In conclusion, patients with emotionalism benefit from fluoxetine treatment if this syndrome keeps patients from social activities or interrupts their rehabilitation programs. Previous studies of emotionalism do not indicate the time factor on the remission of this syndrome. This needs further investigation in the future. A larger-scale double-blind cross-over study is needed to further elucidate the efficacy of fluoxetine in treating emotionalism.

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