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Screening for Pseudobulbar Affect in an Outpatient Mental Health Clinic

Kishen Bera[1], Drunalini Perera[2] and Negar Haghighimehmandari[2]*

[1]Department of Psychiatry and Human Behavior, University of California Riverside, USA

[2]Department of Physiology and Pharmacology, University of California Irvine, USA

Abstract

Objective: Pseudo Bulbar Affect (PBA) is a neurological condition affecting the brain, characterized by frequent, uncontrollable laughing/crying episodes unrelated to mood/social context and are often disruptive, embarrassing, leading to social isolation and impaired quality of life. Symptoms of mood disorders often overlap with that of PBA and hence often misdiagnosed as clinical depression. Our main objective was to determine if the Center for Neurologic Study-Liability Scale (CNS-LS) could be a valuable primary tool for clinicians to use in the outpatient mental health clinics to screen for PBA.

Methods: A total of 223 patients ages ranging from 18-80 were administered the CNS-LS in an outpatient mental health clinic. A score of 13 or higher is felt to correlate with a high likelihood that PBA may exist.

Results: The average score on the CNS-LS Scale for the 223 patients was 12.72. 44.39% of the patients had a score great than or equal to 13. The three primary diagnoses found in the clinic, Major Depression, Bipolar Disorder and Schizophrenia showed 13.42, 15.21 and 12.88 as average scores on CNS-LS and percentages with scores above or equal to 13 was 47.19, 54.76 and 40.63 respectively.

Conclusion: To our knowledge our study is the first screening for PBA utilizing the CNS-LS Scale in a general outpatient psychiatric clinic. The high prevalence of positive screening in this study population suggests that with new pharmacologic treatments now available for treating PBA, regular assessments may result in improved outcomes for patients in an outpatient mental health setting.

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Correspondence:

Kishen Bera, Department of Psychiatry and Human Behavior, University of California Riverside, 41 Exploration Irvine CA 92618, USA, Fax: (714) 456-5112; Tel: (949)752-6556; E-mail: kbera001@ucr.edu

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Introduction

Many people with neurologic disorders or brain injuries may exhibit symptoms of uncontrollable laughing, crying, or both, that are either exaggerated or contradictory to the context in which they occur [1]. These sudden, frequent, extreme and uncontrollable emotional outbursts may impact an individuals' social functioning and their relationships leading to social withdrawal and interfere with activities of daily living [2]. This condition, commonly known as Pseudo bulbar Affect also has a variety of other terminologies which includes Pathological Laughter and Crying (PLC), Emotional Liability, Emotionalism, Emotional dysregulation and more recently, Involuntary Emotional Expression Disorder (IEED) [3]. It occurs secondary to a neurological disease or brain injury, with an estimated prevalence of up to 50% in Amyotrophic Lateral Sclerosis (ALS) and stroke, 39% in Alzheimer's Disease (AD), 10-29% in Multiple Sclerosis (MS), 5-17% in Parkinson's Disease (PD), and 5-11% in Traumatic Brain Injury (TBI) [4]. It is thought to be a 'network problem' when the emotional area of the brain is damaged causing a dys regulation in the brain signaling [5-7]. First identified by evolutionary theorist, Charles Darwin [8], 130 years ago, the origins of PBA varied because only people who suffered from neurologic damage i.e. traumatic brain injury or Alzheimer's disease were considered susceptible to this disorder. According to the Brain Injury Association of America, it is estimated that over one million people deal with PBA in North America alone and despite the growing number of cases, PBA is still under-recognized and undertreated in most medical settings.

One of the most commonly used instruments to screen for PBA is the Center for Neurologic Study-Lability Scale (CNS-LS) [9]. The CNS–LS although validated in ALS and MS populations [10], has not yet been validated in the psychiatric population. PBA may often be misdiagnosed as clinical depression or undiagnosed due to its co-existence. Cummings stated that depression is one of the most common emotional changes in patients with neurodegenerative disease or post-stroke

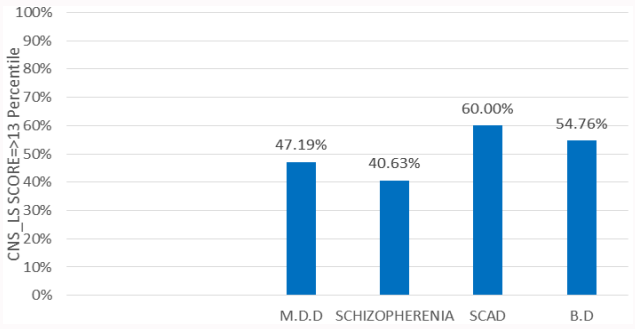

Figure 1: Percentage of CNS-LS Score => 13 for each Diagnosis.

sequelae and as a result, it is often co morbid with PBA [3]. Similarly, various forms of brain injuries have also known to be associated with many emotional difficulties; mainly depression [11]. It is important to recognize in a psychiatric population where clinical depression is most commonly dealt with; PBA may co-exist. Our main objective in this study was to use the CNS-LS in a psychiatric outpatient clinic to determine if the CNS-LS Scale could be utilized as a valuable primary tool for clinicians to screen for PBA in a general psychiatric practice. In our study we sought to determine in PBA may co-exist in patients diagnosed with Major Depressive Disorder (MDD), Bipolar Disorder (BAD) and schizophrenia using the CNS-LS.

Materials and Method

Center for Neurologic Study-Liability Scale (CNS-LS)

The CNS-LS is a 7-item, self-rated quantitative measure of the frequency and severity of PBA symptoms (range 7-35; higher is worse symptoms) [9,10]. In validation studies, a score of 13 or more best predicts a physician's diagnosis of PBA. This instrument assesses the frequency and intensity of crying (3 questions) and laughing (4 questions). Each question is rated on a Likert scale of 1 (applies never) to 5 (applies most of the time), with a possible overall score ranging from 7 to 35. A total score of ≥13 has been recommended as a cutoff for a possible clinical diagnosis of PBA.

Beck Depression Inventory (BDI-II)

Symptoms of depression were assessed using the BDI-II, an instrument that has been widely used as a measure both in patients with mental disorders and in the general population [12,13]. It is a 21-question multiple-choice, self-report inventory that assesses how the subject has been feeling in the last week. Each question has a set of at least four possible responses, ranging in intensity. When the test is scored, a value of 0 to 3 is assigned for each answer and then the total score is compared to a key to determine the depression's severity. According to the manual of the BDI-II, scores from 0-13 indicate minimal depression, scores from 14-19 indicate mild depression, scores from 20-28 indicate moderated expression, and scores from 29-63 indicate severe depression.

Participants

A total of 223 patients were surveyed during their routine outpatient clinical care. Surveys were performed at two outpatient psychiatric clinics. Also, patients with a positive/negative or unknown life time history of Head injuries, ER visits, Neurological disorders and loss of consciousness were not included. All patients consented prior to the survey. The CNS-LS questionnaire was handed to patients who were able to fill out the question stems independently and given to all patients irrespective of the diagnosis, however the three main primary diagnoses were considered for further evaluation in this study - MDD, BAD and Schizophrenia. Anxiety disorder although common was not considered in our study because majority patient's anxiety was associated with the primary diagnosis major depression. The inclusion criteria were ages ranging from 18-80. Majority of our patients spoke English hence the exclusion criteria were patients who could not read English or those who were unable to complete the surveys independently.

Table 1: The average CNS-LS scores and the total number of patients in each diagnosis group.

Diagnosis	Number	Average CNS-LS Scores
MDD	89	13.42 (SD)
Schizophrenia	32	12.88
Bipolar Disorder	42	14.07
Total	163	13.89

Results

The Average CNS-LS score for the 223 patients with various diagnoses at the outpatient psychiatric clinic was 12.72. Due to the minimal number of patients in different diagnostic groups, data for our three main common diagnoses found at our clinic; MDD, BAD and Schizophrenia are tabulated below. As shown in (Table 1), we had 89 MDD patients with an average CNS-LS score of 13.42 and 42 BAD patients with an Average score of 15.21. 32 Schizophrenic patients showed an average CNL-LS score of 12.88, thus indicating that patients with psychiatric disorders have a high prevalence of PBA symptoms. Among the 223 patients 44.39% patients had a CNS-LS score greater than or equal to 13 which suggests a possible PBA. We calculated separately within in the three-main primary diagnoses the average CNS-LS score percentages considering only those patients who had a score equal or greater than 13. Accordingly, in (Figure 1), we see the percentages with scores above or equal to 13 was 47.19, 54.76 and 40.63 in MDD, BAD and Schizophrenia respectively. This figure confirms the high prevalence of PBA symptoms in a psychiatric population.

Discussion

Clinically characterized by a loss of affective control and an inability to suppress crying or laughter which persists for a considerable period, PBA has been encountered in various disorders such as ALS, MS, TBI, stroke, brain tumors, cerebellar disorders, and Alzheimer's disease. PBA has been gaining more recognition in the setting of these chronic neurological disorders but not so in that of psychiatric disorders. Early research indicated that PBA is associated with a higher prevalence of diagnosable psychiatric disorders [14] and around 30-35% of patients with PBA are depressed [9,15]. Tateno et al. [16] also noted that when compared to patients without PBA, those with PBA had a higher prevalence of anxiety symptoms and poorer social functioning. In short, both depression and anxiety related symptoms could be indistinguishable from that of PBA. Our study shows the prevalence of possible PBA in three main psychiatric groups indicating a possible coexistence or under diagnosed PBA at our psychiatric clinic. Having efficient diagnostic tools, PBA is still undiagnosed by health care providers probably due to wrong clinical impressions such as pain, anxiety, depression, and so forth leading to a more obvious and common diagnosis. Brooks et al. [17] stated that the condition is under recognized in a population prevalence of up to 2 million people in the United States. In 2010, with the introduction

of Neudexta; a new break through medication for the treatment of PBA, more recognition and awareness promoted many neurologists to consider PBA as a differential diagnosis in patients with a chronic neurological disorder and symptoms of emotional instability. However due to the indistinguishable symptoms of PBA and its possible concomitant occurrence in psychiatric disorders, it is not common that many psychiatrists consider PBA as a possibility. Our study data shows the high possibility of coexistence and hence, it is imperative suggestion that PBA be considered in a psychiatric population. The use of CNS-LS has been suggested as a screening tool to diagnose and treat patients with PBA as it provides a quantitative measure of the perceived frequency of episodes [18]. It is a short, seven stem self-administered questionnaire that can be used by all psychiatrists and other health care providers who will then be challenged to either rule out a possible misdiagnosis or confirm a possible co-existence of PBA. The main aim of our study was to underline the importance and to validate the use of CNS-LS in a general psychiatric population which will be useful in identifying patients with affective ability that would otherwise go undetected or misdiagnosed by diagnostic interview alone; in turn better recognizing and diagnosing cases of PBA.

Psychologically PBA is most concerning because of its consequent emotional stress and lack of social support due to the lack of knowledge and understanding of this disorder. It is a very distressing condition to have and the physical burden is on both caregiver and patient. In PBA the emotional response is inconsistent with mood, although not necessarily; the degree of the altered emotional response is often striking and in appropriate. It has also been shown that PBA interferes with both an increase in health care cost and with rehabilitation [19,20]. All this leads to a poor quality of life. Symptoms of PBA are now being more acknowledged and recognized, that scientist are doing more research about this seemingly common and tormenting disorder because it has shown to have a high prevalence of symptoms in the general population. It is challenging to make a diagnosis and begin a treatment plan amid a lack of education and awareness about PBA in the general population. The convenient CNS-LS screening tool could potentially promote awareness among patients and caregivers, bridging an opportunity for education and further discussions of confirming a possible and successfully treatable diagnosis of PBA. According to the most recent published data, Garcia-Baran et al. [21] stated that the regulation of mood and affect is yet unknown and is a complicated and poorly understood phenomenon. Nevertheless, with Nuedexta® (Avanir Pharmaceuticals, Aliso Viejo, CA, USA) the only FDA (Food and Drug Administration) approved medication for the treatment of PBA, there is consolation to give these patients in terms of 'hope' and a symptomatic relief which will not only improve the mental distress but also their social functioning and quality of life.

A single question about the presence of involuntary or exaggerated episodes of laughing or crying may be an effective way of determining the need for further assessment with CNS-LS which would indeed benefit all patients in our psychiatric population because the majority of patients in psychiatry have some sort of mood disturbance. We used the CNS-LS on a general outpatient psychiatric population irrespective of their diagnosis but mainly focused on three main psychiatric disorders that were more populated at our clinics. Interestingly all three disorders showed a high occurrence of hallmark symptoms of PBA indicated by a CNS-LS score ≥ 13; thus, concluding a positive screening and a high prevalence of PBA at our psychiatric outpatient clinic. It must be kept in mind that PBA is a neurological disorder. Although considered, we did not extract and include in this study the history of head injuries, convulsions, hospitalizations following head injuries, emergency room visits, motor vehicle accidents with possible concussions, history of loss of consciousness etc. (which requires future studies to evaluate the presence or absence of clinically diagnosed PBA in those with a positive CNS-LS screen) because our main goal was to determine if the CNS-LS Scale could be validated and utilized as a primary screening tool for PBA in a general psychiatric population. We noticed that majority of psychiatric patients could not either recollect details or had no memory of such events. Therefore, once screening for PBA has been confirmed positive via the CNS-LS, further evaluations can be made via more specific diagnostic criteria's that have already been established to define PBA more objectively, i.e. Poeck [22], Cummings [23]. This would warrant further evaluation if an underlying neurologic condition exists.

Conclusion

In conclusion, the CNS-LS will not be sufficiently specific to be diagnostic for PBA symptoms, however; in a general psychiatric population where it is common to have indistinguishable symptoms of PBA with a possible concomitant occurrence it would be of vital importance to use a screening tool. We suggest the CNS-LS be utilized as a valuable primary tool for clinicians to screen for PBA in a general psychiatric practice.

References

1. Archiniegas DB, Topkoff J. The neuropsychiatry of pathologic affect: an approach to evaluation and treatment. Semin Clin Neuropsychiatry. 2000;5(4):290-306.
2. Colamonico J, Formella A, Bradley W. Pseudo bulbar affect: Burden of illness in the USA. Adv Ther. 2012; 29(9):775-98.
3. Cummings JL, Arciniegas DB, Brooks BR, Herndon RM, Lauterbach EC, et al. Defining and diagnosing involuntary emotional expression disorder. CNS Spectr. 2006;11(S6):1-7.
4. Miller A, Pratt H, Schiffer RB. Pseudo bulbar affect: the spectrum of clinical presentations, etiologies and treatments. Expert Rev Neurother. 2011;11(7):1077-88.
5. Greenamyre JT. The role of glutamate in neurotransmission and in neurologic disease. Arch Neurol. 1986;43(10): 1058-63.
6. Bittigau P, Ikonomidou C. Glutamate in neurologic diseases. J Child Neurol. 1997;12(8):461-85.
7. Mattson MP. Excitotoxic and excitoprotective mechanism: abundant targets for the prevention and treatment of neurodegenerative disorders. Neuromolecular Med. 2003;3(2):65-94.
8. Darwin CR. The expression of the emotions in man and animals. London: John Murray. 1872. 1st edition.
9. Moore SR, Gresham LS, Bromberg MB, Kasarkis EJ, Smith RA. A self report measure of affective lability. J Neurol Neurosurg Psychiatry. 1997;63(1):89-93.
10. Smith RA, Berg JE, Pope LE, Callahan JD, Wynn D, Thisted RA, et al. Validation of the CNS emotional lability scale for pseudobulbar affect (pathological laughing and crying) in multiple sclerosis patients. Mult Scler. 2004;10(6):679-85.
11. Ownsworth TL, McFarland K, Young R. Self-awareness and psychosocial functioning following acquired brain injury: An evaluation of a group support programme. Neuropsychological Rehabilitation. 2000;10(5):465-84.
12. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry. 1961;4:561-71.

13. Beck AT, Steer RA, Garbin MG. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clin Psychol Rev. 1988;8(1):77-100.

14. Calvert T, Knapp P, House A. Psychological associations with emotionalism after stroke. J Neurol Neurosurg Psychiatry. 1998;65(6):928-9.

15. Müller U, Murai T, Bauer-Wittmund T, von Cramon DY. Paroxetine versus citalopram treatment of pathological crying after brain injury. Brain Inj. 1999;13(10):805-11.

16. Tateno A, Jorge RE, Robinson RG. Pathological laughing and crying following traumatic brain injury. J Neuropsychiatry Clin Neurosci. 2004;16(4):426-434.

17. Brooks BR, Crumpacker D, Fellus J, Kantor D, Kaye RE. PRISM: a novel research tool to assess the prevalence of pseudobulbar affect symptoms across neurological conditions. PLoS One. 2013;8(8):e72232.

18. Center for Neurological Study – Liability Scale for Psuedobulbar Affect. 2010.

19. Rudolph JL, Fonda JR, Hunt PR, McGlinchey RE, Milberg WP, Reynolds MW, et al. Association of Pseudobulbar Affect symptoms with quality of life and healthcare costs in Veterans with traumatic brain injury. J Affect Disord. 2016;190:150-5.

20. Ahmed A, Simmons Z. Pseudobulbar affect: prevalence and management. Ther Clin Risk Manag. 2013;9:483-9.

21. Garcia-Baran D, Johnson TM, Wagner J, Shen J, Geers M. Therapeutic approach of a high functioning individual with traumatic brain injury and subsequent emotional volatility with features of pathological laughter and crying with dextromethorphan/quinidine. Medicine (Baltimore). 2016; 95(12):e2886.

22. Poeck K. Pathophysiology of emotional disorders associated with brain damage. In: Vinken PJ, Bruyn GW, editors. Handbook of Clinical Neurology. Amsterdam: North Holland Publishing. 1969;3:343-67.

23. Cummings JL, Arciniegas DB, Brooks BR, Herndon RM, Lauterbach EC, Pioro EP, et al. Defining and diagnosing involuntary emotional expression disorder. CNS Spectr. 2006;11(S6):1-7.