



Research Paper

Anxiety and depression in spasmodic dysphonia patients

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Abstract *Objective/Hypothesis:* Experts used to believe that spasmodic dysphonia (SD) was a psychogenic disorder. Although SD is now established as a neurological disorder, the rates of co-morbid anxiety and depression range from 7.1% to 62%. Our objective was to study the prevalence and risk factors associated with these mood disorders in SD patients.

Study design: Retrospective.

Methods: SD patients who presented for botulinum toxin injections were recruited. Demographic data, Hospital Anxiety and Depression Scale (HADS), Voice Handicap Index-10 (VHI-10), General Self-Efficacy scale (GSES), Disease Specific Self-Efficacy in Spasmodic Dysphonia scale (DSSE), and Consensus Auditory Perceptual Evaluation of Voice (CAPE-V) were collected. *Results:* One hundred and forty two patients (age 59.2 ± 13.6 years, 25.4% male) had VHI-10 of 26.3 ± 6.9 (mean \pm standard deviation), GSES 33.2 ± 5.8 , CAPE-V 43.9 ± 20.9 , HADS anxiety 6.7 ± 3.7 , and HADS depression 3.6 ± 2.8 . About 19 (13.4%) and 4 (2.8%) had symptoms of anxiety and depression respectively. Final linear regression model for HADS anxiety ($R^2 = 32.90\%$) showed that patients who were less likely to have anxiety symptoms were older age ($p < 0.001$), male ($p = 0.002$), have higher GSES ($p < 0.001$) and lower VHI-10 ($p = 0.004$). Final linear regression model for HADS depression score ($R^2 = 34.42\%$) showed that patients who were less likely to have depressive symptoms had high DSSES ($p < 0.001$).

Conclusions: Prevalence of anxiety (13.4%) and depression (2.8%) in SD were lower than previously reported in the literature. Risk factors for anxiety were: younger age, female gender,

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lower general self-efficacy, and higher perceived vocal handicap. The main risk factor for depression was lower disease specific self-efficacy.

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Introduction

In the past, spasmodic dysphonia (SD) was believed to be a psychosomatic disorder.^{1–3} Experts thought that SD was a functional disorder triggered by stress, anxiety, and depression. SD was characterized as a personality disorder treated with psychotherapy.² It was not until the 1960s that researchers like G. Paul Moore started to discover the biological basis of SD.^{3,4}

It is now accepted that SD is a focal neurological dystonia of the intrinsic muscles of the larynx.^{5,6} Involuntary muscle contractions occur during speech, causing a characteristic vocal output. SD is task-specific, so the other laryngeal functions of swallowing and breathing are spared. There are three main types of SD: (1) When only the adductor muscles are affected (thyroarytenoid, lateral cricoarytenoid, and interarytenoid muscles), the patient has adductor SD with a strangled vocal quality. (2) When only the abductor muscles are affected (posterior cricoarytenoid muscles), the patient has abductor SD with a breathy vocal quality. (3) When both the adductor and abductor muscles are affected, the patient has mixed SD. The National Spasmodic Dysphonia Association estimates that approximately 50,000 people in North America are affected by SD.⁵ One study from Iceland estimated the prevalence of primary laryngeal dystonia to be 5.9 per 100,000.⁷ Accurate worldwide statistics are not available.⁸

Although SD is now recognized as a neurological disorder, the pathogenesis of this voice disorder is still unknown. Due to historic misconceptions, these patients may be misdiagnosed as having a psychiatric or functional disorder. To further complicate the situation, SD patients may have co-existent psychiatric disorders like anxiety and depression. Previous studies have reported co-morbid rates of anxiety and depression in SD patients to be 7.1%–62.0%.^{3,9–11} This is obviously a wide range.

It is important for otolaryngologists to properly diagnose SD and to identify patients who are at risk for mood disorders like anxiety and depression. Identifying these patients is the first step to helping them seek treatment. The objective of this study was to determine the prevalence and risk factors associated with anxiety and depression in SD patients.

Methods

Approval was obtained from the institutional review board at the University of Washington. A retrospective cohort study was conducted of all adult SD patients who presented for botulinum toxin injections from September 2011 to June 2012. Patients were excluded if they did not have the

mental capacity to complete the study, if they were <18 years old, or if they declined to participate. Mental capacity was determined by the ENT clinician who had a long term relationship with the patient. Clinical diagnosis of dementia and inability to orient to person, place, or time was used. The Hospital Anxiety and Depression Scale (HADS) was used as a screening tool for these mood disorders.¹² A database was created with the following variables: age, gender, professional voice use, employment status, Voice Handicap Index-10 (VHI-10),¹³ General Self Efficacy scale (SE),¹⁴ and Consensus Auditory Perceptual Evaluation of Voice (CAPE-V).¹⁵

Hospital Anxiety and Depression Scale (HADS)¹²

HADS is a validated, reliable, screening tool for anxiety and depression in an outpatient population. There are seven questions on anxiety symptoms and seven questions on depressive symptoms experienced in the past week by the patient. Questions are scored on a four-point scale (0–3). Scores on each subscale range from 0 to 21. Normal is a score of 0–7, highly suggestive of a mood disorder is 8–10, and probable presence of a mood disorder is a score of ≥ 11 . A review of the literature has reported good internal consistency for both subscales: Cronbach's α of HADS-A was 0.83 (0.68–0.93) and of HADS-D was 0.82 (0.67–0.90).¹⁶ HADS has been used in other studies of mood disorders in voice patients. HADS has been used as the primary outcome measure for other voice studies.^{17–19}

Other measurement tools

A patient's perceived handicap from his/her voice was measured with VHI-10.¹³ This reliable, validated questionnaire includes 10 items answered on a scale of 0–4. Scores range from 0 to 40 and an abnormal score is above 11. VHI-10 was adapted from a longer 30 item questionnaire and has been used widely in the voice literature.

An expert clinician's evaluation of the quality of the patient's voice was measured with CAPE-V.¹⁵ This standardized measurement tool was developed by the American Speech-Language-Hearing Association. Six vocal qualities are evaluated: roughness, breathiness, strain, pitch, loudness, and overall quality. Each attribute is measured on a visual analog scale of 100 mm by indicating the perceived deviance from normal. A higher score indicates a lower quality of voice. The CAPE-V assessments were all performed by a single speech language pathologist with over 30 years of experience in neurology and voice disorders.

The General Self-Efficacy Scale (GSES) is a validated tool used to measure self-efficacy.¹⁴ Self-efficacy (SE) is the

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