

## CLINICAL

# Treatment of spasmodic dysphonia with homeopathic medicine: a clinical case report

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**Botulinum toxin (Botox) injection is the only conventional medical treatment available for patients with spasmodic dysphonia (SD). Some patients are reluctant to receive Botox treatment due to concerns about unknown long-term side effects, expense, and dependence on repeated injections. The purpose of the study was to report the perceptual and physiological changes in the vocal functions of an SD patient treated with classical homeopathy. The results were similar to a previous case report: classical homeopathy seems to be capable of ameliorating SD symptoms beyond the short-term effects of Botox injections. Although the physiological mechanism of homeopathic healing is not fully accounted for by the current bio-medical models, it may be an effective therapeutic alternative for some SD patients. Homeopathy (2009) 98, 56–59.**

**Keywords:** homeopathy; spasmodic dysphonia; Botox; voice disorder

## Introduction

Spasmodic dysphonia (SD) is a rare voice disorder characterized by involuntary spasms in the laryngeal muscles during speech production. It is considered as a focal laryngeal dystonia defined as “a chronic neurologic disorder of central motor processing characterized by action-induced spasms of the vocal folds”.<sup>1</sup> It is “an extremely serious voice disorder that can produce occupational dislocation, family disruption, social withdrawal, depression, and contemplation of suicide”.<sup>2</sup> SD includes two major types of speech symptoms: adductor-spasmodic dysphonia (ADSD) and abductor-spasmodic dysphonia (ABSD).<sup>3,4</sup> The ADSD type, characterized by a strain-strangled voice that is harsh, often with a tremor, inappropriate pitch or pitch breaks, breathiness and glottal fry. Although these disorders have been described in the literature, the symptoms have not been well defined and may appear similar to those of vocal tremor or muscle tension dysphonia (MTD). Historically SD was considered as a psychogenic disorder of uncertain origin. It is resistant to available therapies

except weakening one or both vocal folds by resection of the recurrent laryngeal nerve (RLN) or injection of botulinum toxin.

During the past decade, botulinum toxin (Botox) has emerged as the conventional treatment of choice for both types of SD.<sup>1,5</sup> Botox causes unilateral or bilateral weakness of the thyroarytenoid (TA) muscle by inhibiting the release of acetylcholine at the motor end plates resulting in a temporary paralysis of the injected muscle. Ali *et al.* even reported that Botox produces improvement in vocal functions by “causing neuroplastic reorganization within the CNS, set in motion by peripheral sensorimotor effects, but persisting as the peripheral effects of the toxin begin to abate”.<sup>6</sup> In recent decades, Botox treatment is supported by numerous perceptual, physiological, acoustic and aerodynamic assessments of the patients’ vocal functions,<sup>7–10</sup> and has been hailed as the “gold standard of treatment.” However, Watts and Nye in their Cochrane Review concluded with “an inability to draw unbiased generalized conclusions regarding the effectiveness of botulinum toxin for all types of spasmodic dysphonia”.<sup>11</sup> Anari *et al.*<sup>12</sup> reported that the early improvements in quality of life after Botox injection can only in small part be attributed to the neurotoxic effects of the agent. In addition, Botox has clinical limitations, including the need for repeated injections, the unpredictable relationship between dosage and response, and

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possible adverse effects including the possibility of short-term swallowing and voice problems.<sup>13,14</sup> Alternatives to Botox include surgical procedures that produce TA and lateral cricoarytenoid (LCA) muscle paralysis in patients by selectively denervating the RLN branches to these muscles.<sup>15</sup> These procedures may cause complications due to injury to branches of the RLN, and permanent alteration in laryngeal functions.<sup>13,15</sup> Therefore, they are only recommended for patients with severe SD.

We still lack a complete understanding of the abnormal processes of the possible etiologies of SD. "The disorder seems to be attributable to a loss of inhibition, perhaps due to dysfunction of brain stem inhibitory circuits and/or interruptions in the pathways between the striatum and regions normally inhibited by the striatum."<sup>16</sup> A few studies using neuroimaging techniques purport to have discovered specific structural lesions of the brain responsible for SD. Finitzo and Freeman claimed to have confirmed that "an overwhelming percentage ... of subjects with spasmodic dysphonia have multifocal structural [(by magnetic resonance imaging) MRI], metabolic [(by single-photon emission computed tomography) SPECT], and/or electrophysiologic [(by brain electrical activity mapping) BEAM] abnormalities of the central nervous system".<sup>17</sup> Simonyan *et al.* also reported "disorder-specific brain abnormalities in these patients as determined by a combined approach of diffusion tensor imaging (DTI) and *postmortem* histopathology",<sup>18</sup> and the diffusivity changes were positively correlated with clinical symptoms of SD. However, Aronson and Lagerlund caution that "these imaging and laboratory studies need to be considered in the light of the facts and opinions that prevail regarding their accuracy, reliability, and validity for measuring brain structure and function in the normal population in general, and in spastic dysphonia patients in particular".<sup>2</sup> According to Ludlow, the onset of the SDs in midlife, at times of increased stress, illness, or injury may be because of changes in the immune system.<sup>16</sup> The SDs may represent a family of disorders that depend upon the coincidence of two or more factors, including psychogenic factors. According to classical homeopathy,<sup>19</sup> the true etiology of such disorders could be traced to the particulars of the patients' constitutions, or Miasms.

In spite of the controversies and limitations of Botox as the conventional treatment of SD, an alternative or complementary therapeutic treatment modality is yet to be identified. There are few research papers or reports that explore the feasibility, efficacy and effectiveness of complementary or alternative medical (CAM) modalities in the treatment of communication disorders like SD. Our previous study documented significant voice improvements of a single patient treated with classical homeopathy.<sup>20</sup> Two articles have documented the use of acupuncture as a treatment of adductor SD.<sup>21,22</sup>

This study was the second single-subject clinical investigation with the attempt to treat SD with the same classical homeopathic method reported earlier.<sup>20</sup> Although only one patient was involved, the improvements in the vocal functions of the ADSD patient four months after the initiation of the homeopathic treatment seem to support the

hypothesis that some SD patients could benefit from the therapeutic modality of classical homeopathy.

## Material and methods

### Subject

The patient was a 57-year-old male technician and an amateur guitar coach. He was diagnosed as having ADSD without other laryngeal disorders by two otolaryngologists with nasoendoscopic laryngeal examinations at two different clinics. Diagnostic criteria for ADSD included task-specific hyperadduction of the vocal folds (while speaking but not whisper, cough, swallow, breathing, and emotional expression) during the speech and video fiberoptic nasolaryngoscopic examinations. Both otolaryngologists did not find any evidence of tremor, dystonia, or other movement disorders with neurologic implications. Both otolaryngologists recommended Botox, but the patient was not willing to accept it due to concern about the unknown long-term side effects and other personal reasons.

### Homeopathic diagnosis and treatment

The aim of the study was to preliminarily test the effectiveness of classical homeopathic medicine as a treatment of SD. Specifically we propose that SD was not a local "disease." Therefore, a holistic analysis of the patient's constitution including his mental, emotional, physiological as well as other individualized characteristics should be conducted. In addition, the triggering factors, especially the emotional or traumatic experiences ('Never Well Since') were analyzed. The process of a homeopathic prescription involves translating the patient's expressions of disease into language that can be used for repertorization and materia medica study. The rubrics that might be helpful in SD, based on common symptoms include:

- Mind, speech.
- Mind, nervousness, anticipation.
- Mouth, speech.
- Mouth, paralysis.
- Mouth, trembling.
- Throat, rawness and soreness.
- Throat, stick sensation.
- Larynx, paralysis.
- Larynx, Voice, hoarseness.

The patient was interviewed by a doctor with extensive training in neurology and internal medicine, who was also a licensed homeopath with 30 years of clinical experience. All symptoms were recorded and repertorised based on the principles of classical homeopathy with the assistance of the computer repertory program Radar 9.1 (Archibel). *Argentum nitricum* was prominently indicated.

The patient was asked to dissolve 3 pellets of *Argentum nitricum* (30 C from Boiron) in a sterilized bottle with 8 oz (approx. 240 mL) of distilled water, and to give three vigorous successions to the bottle then take a teaspoonful from the bottle and drop it into a clean cup with 3 oz (approx. 90 mL) of distilled water. The patient was instructed to take this twice per day for 30 days, with a weekly report to the

homeopath about his mental, emotional and general health status; monthly acoustic recording of his vocal functions; and to immediately report any aggravation symptoms.

### Speech symptom recording

The patient was asked to practice, then read and record a set of 20 sentences recommended by the Laryngeal and Speech Section, Clinical Neurosciences Program of National Institute of Neurological Disorders and Stroke so that SD symptoms could be quantified based on voice breaks on vowels.<sup>3,23</sup> These 20 sentences contain many glottal stops before vowels to elicit symptoms of ADSD. The vocal quality of the reading was assessed by licensed speech therapists. Speech samples were digitally tape-recorded with a high quality microphone with a constant 5 cm mouth-to-microphone distance. Recordings of the speech samples were made one week before the subject's dose of homeopathic medicine, and then one month, two months, and three months after the patient starting treatment.

### Speech and voice measurements

**Voice break analysis:** Voice breaks are defined as gaps in the fundamental frequency, which do not occur at word or syllable boundaries. TA muscle activation patterns have been found to be abnormal in ADSD only during voice breaks.<sup>24</sup> Sound spectrograms of the speech samples were produced using Computerized Speech Lab (CSL 4300; Kay Elemetrics Corp.) with a sampling rate of 25 kHz and a bandwidth of 35 Hz. This provided a spectrographic image of the fundamental frequency and the first two harmonics. The voice breaks during vowel and voiced consonant segments were counted from the momentary spectrographic "gaps" by a doctoral level researcher of speech pathology with clinical competence certificate (CCC) from American Speech, Language and Hearing Association (ASHA).

**Perceptual analysis:** Five licensed speech-language therapists gave additional perceptual measurements using the revised Consensus Auditory-Perceptual Evaluation of voice scale (CAPE-V). This indicates salient perceptual vocal attributes for SD, especially ADSD patients. The attributes are as follows: (a) overall severity; (b) breathiness; (c) strain; and (d) loudness abnormality.

### Statistical analysis

A paired *t*-test was performed comparing pre- and post-perceptual treatment CAPE-V scores of the five licensed speech-language therapists. Descriptive statistics were used to describe the number of voice breaks one month, two months, and three months after the initiation of the treatment.

## Results

### Perceptual analysis

Significant improvements were found for the CAPE-V variables of overall severity ( $t = 5.32$ ;  $p < 0.011$ ) and strain ( $t = 4.22$ ;  $p < 0.013$ ). No significant differences were

found for the other two variables, but there was a favourable trend for symptom ameliorations (Figure 1).

### Acoustical analysis

The numbers of voice breaks decreased following treatment: the total number of voice breaks pre-treatment was 31, one-month post-treatment 15, two-month post-treatment 12, and three-month post-treatment 5.

## Discussion

The findings of this single-subject preliminary experimentation are consistent within our previous case report<sup>20</sup> indicating that classical homeopathy could be an effective treatment for SD. Towards the end of the three months post the treatment, the subject's voice was found to have significantly reduced overall severity and strain/strangle qualities, these two vocal qualities are also considered to be the most salient features of ADSD patients.<sup>16</sup> Breathiness, pitch abnormality and loudness abnormality may or may not be the vocal characteristics for ADSD patients, however, this subject had improved performance also on these three variables, although these differences were not statistically significant.

The number of voice breaks is another distinguishing feature of ADSD patients. This patient demonstrated significantly reduced voice breaks for vowels and voiced consonant segments toward the end of the three months post the treatment. This indicates the patient's easier control and more natural use of the mechanisms involved in speech production. The patient also expressed overall improvement in his mental and emotional well-being. This is in accordance with the principles of classical homeopathy that aims at treating the patient, not the disease. In other words, it is the terrain, not the disease, that should be the primary focus of attention of the therapists.

The results from this single-subject experimentation were by no means conclusive regarding the long-term effectiveness of classical homeopathy for SD treatment. However, this preliminary study offers a new paradigm and approach quite different from the current conventional intervention of choice (Botox injections) of SD. It may shed more light on the actual etiologies of this devastating voice

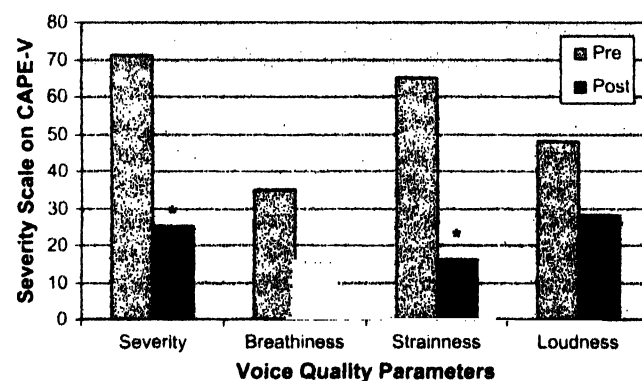


Figure 1 CAPE-V scores (mean of scores from five speech therapists) ( $p < 0.05$ ).

dysfunction for clinicians seeking a "cure", and could also be a therapeutic alternative for the SD patients, especially those who refuse Botox injection for personal, cultural and philosophical reasons.

## Conclusion

Homeopathy has "an important therapeutic role in rehabilitation medicine".<sup>25</sup> Although the application of the classical homeopathy requires in-depth training in homeopathic prescribing, and may lead to long-term, curative effects, identification of commonly prescribed homeopathic medicines or remedies and the clinical indications for each specific homeopathic medicine could lead to a simplification of homeopathic prescribing using algorithms based on classical homeopathic literature and clinical reports. As Chapman and Wilson concluded, the curative potential of homeopathic medicines, together with their low cost and minimal incidence of adverse reactions attending their use, makes collaboration between the rehabilitation and homeopathic communities an intriguing possibility.<sup>25</sup>

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