The Evolution of Cognitive-Behavioral Therapy as an Approach to Tinnitus Patient Management

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ABSTRACT

Many forms of tinnitus management exist, some directed toward causative factors, others toward symptom relief. In this paper, I describe the evolution of a University-hospital-based multidisciplinary team approach that focuses on the affective component of tinnitus in addition to the sensory component. Cognitive-behavioral therapy is the primary intervention method used in conjunction with other management procedures. The rationale and principles underlying this management technique are described.

GENERAL PRINCIPLES

Perusal of the literature on tinnitus management reveals a long list of procedures that were initially heralded but are no longer in use. Clinicians anxious to assist patients suffering from this frustrating malady have been repeatedly buoyed by early reports of treatment success, only to be disappointed by the lack of follow-up data confirming lasting improvement. This paper traces the evolution of one clinician's 20-year history of attempts at tinnitus patient management, terminating, at the present time, in cognitive-behavioral intervention supported by a multidisciplinary team approach.

My initial therapeutic endeavors were directed toward alleviation of the symptom through attempts at alteration of the peripheral generating source of the tinnitus. Identification and subsequent alleviation of the underlying cause of the tinnitus has been and shall continue to be the logical, principal goal. Finding physicians willing to order and pursue a comprehensive array of diagnostic test batteries has not, however, been an easy task. The number of tests a distraught tinnitus patient may request are exhaustive and cost-prohibitive. In the current climate of health care reform, health care providers must carefully weigh the cost-benefit ratio of the tests in the diagnostic battery. An examination that is too cursory is not in the best interest of the patient, however, and it often results in negative affect and anger directed toward the physician.

The comprehensive medical examination should include a detailed analysis of the ear, nose, and throat; and some degree of assessment of the cardiovascular system (elevated blood pressure, anemia, extensive arteriosclerosis); metabolic function (diabetes, hypo- or hyperthyroidism, hyperlipidemia, vitamin deficiencies); pharmacologic factors (use of steroids, antibiotics, sedatives, antidepressants, nonsteroidal anti-inflammatories, salicylates); screening for possible temporo-mandibular joint disorders; screening for possible cervical abnormalities; serologic studies; and if necessary, radiologic studies. The reader is referred to Shulman for an excellent discussion of a comprehensive medical diagnostic battery.[1]

Unfortunately, even with comprehensive testing, great difficulty remains in identifying the cause of idiopathic tinnitus. Thus, subsequent efforts have been aimed at controlling the symptom. Strategies cited in the literature and attempted by me have included masking (with home devices, tinnitus maskers, tinnitus instruments, and hearing aids),[2-4] electrostimulation,[5,6] nutritional counseling (including the use of herbs such as *ginkgo biloba*) and vitamin supplements such as niacin and zinc.[7] Short-term success with these procedures was inconsistent, at best. Plus, with the exception of hearing aids, the record of long-term success was even lower.

This frustrating lack of achievement led to the question of why symptom management has been such as dismal failure. Is it because the symptom of tinnitus is so diverse both in terms of its underlying cause and its physical manifestations? Perhaps, but another possibility is that attempts at symptom control have been directed at the wrong manifestation of tinnitus.

Traditionally, attempts have been directed toward the physical elimination or reduction of the *loudness of the sound*. Conceivably, management attempts would be more successful if they were directed toward a tinnitus-related attribute that is more manageable. One common characteristic shared by all uncompensated tinnitus patients is an unhealthy affective attitude or a maladaptive reaction to their unwanted auditory annoyance. A reaction is a learned behavior. Unlike an internally produced sound, like tinnitus, all behaviors are subject to modification. Therefore, over the years, the strategies adopted by me have been redirected away from the peripheral source, and toward the final site of perception, the brain.

It is reasonable to assume that regardless of the cause of tinnitus, the differentiation of the compensated versus the uncompensated patient is ultimately a function of how the patient reacts to the tinnitus.[8] If a person is not *bothered* by the tinnitus, it ceases to be a problem. That is not to say that attempts should not be made to identify and, if possible, rectify the underlying disease process. But given the reality that most cases of subjective tinnitus are idiopathic in nature, psychologic intervention aimed at successfully reducing stress, distress, and the distraction associated with the tinnitus can be very productive and often produces the most attainable goals.

An analogy can be drawn to non-medical treatments for another invisible, highly personal symptom, pain. Pain treatment differs from tinnitus treatment in that the underlying cause of pain is often identifiable and treatable. As a result, comprehensively tested drugs can be prescribed whose purpose is to attack the causes of the pain, or at least the structures in the brain responsible for interpreting that sensation. When the cause of pain cannot be pharmaceutically controlled, or when the medication cannot be tolerated because of side effects, several well-tested psychologic procedures are available for altering a patient's affective reaction to pain. Some of the effects of treatments designed to alter psychologic interpretations can be transduced into functional and structural changes, as well. Benedetti[9] has described modulation of secretion patterns of stress-related hormones and neuro-transmitters. Positron emission tomograms (PET) have further illustrated altered physiologic structural functions occurring following psychologic treatments. It is reasonable to assume, then, that a psychologic approach to modifying a patient's reaction to tinnitus might also elicit structural or functional changes in the central nervous system.

Cognitive-behavioral therapy has been successfully used for patients suffering from chronic pain and is one of the most widely used and accepted psychologic strategies for coping with intractable disorders. In 1982, we instituted what is, to the best of my knowledge, the first attempt by audiologists to integrate a cognitive-behavioral approach into a tinnitus management protocol.[10] The importance of treating both the affect and sensory components of the complaint was recognized and emphasized by Shulman.[11]

What is cognitive-behavioral therapy? Two main components to this approach exist, as implied by its name. One is cognitive restructuring, or an attempt to reconceptualize the problems presented by a disorder into a form that does not contribute to its severity. Stated differently, cognitive restructuring assists patients to think differently and alter their attitudes about their problem. The other component is behavior modification. Iden-tifying factors that contribute to the problem and the subsequent reaction, and then finding ways to modify them through behavior com-prise this component. The combined cognitive-behavioral approach assists patients to identify and correct maladaptive behaviors, distorted conceptions, and irrational beliefs. Patients can then monitor the role that negative thoughts exert in maintaining their adverse reactions to their unwanted symptoms, whether they be pain or tinnitus. An excellent discussion of this approach has been written by Turk, and colleagues.[12]

It is beyond the scope of this paper to detail the processes involved in cognitive-behavioral therapy for tinnitus patients. The interested reader is referred to Sweetow.[8] Basically, however, the flow of therapy entails the following steps:

(1) Define the problem in operational terms. For example, help the patient describe realistically and very specifically when the tinnitus presents

a problem (i.e., is it only bothersome at night?) and in what manner other behaviors are affected (does the patient stay at home when the tinnitus is loud?).

(2) Identify behaviors and thoughts affected by the tinnitus. Is the patient angry; does the patient fear a tumor might be causing the tinnitus; is the patient suicidal or clinically depressed?

(3) List maladaptive strategies and cognitive distortions currently employed. All humans indulge in cognitive distortions. Among the more common are: all-or-nothing thinking, overgeneralization, jumping to conclusions, emotional reasoning, labeling, disqualifying the positive, and catastrophizing.

(4) Distinguish between the tinnitus experience and the maladaptive tinnitus behavior. The patient should be led to understand that a refusal to socialize results from the maladaptive reaction, not the tinnitus itself.

(5) Identify alternate thoughts, behaviors, and strategies. The goal is to convince the patient that as a rational human being, irrational thoughts, even those long ingrained by virtue of previous attitudes, cannot persist when scrutinized logically. For each thought, there is an alternative thought. The efficacy of this procedure can be demonstrated by helping the patient set up alternative possibilities that will undergo rigorous and mutually agreed upon testing.

(6) Devise and rehearse strategies that can be measured. Cognitive-behavioral intervention is highly interactive. The patient must assume responsibility for becoming an active partner in restructuring thoughts and behaviors. Homework assignments are regularly given and structured to allow the patient to test the progress (or lack thereof). Homework assignments may consist of maintaining a daily loudness and annoyance chart, diaries, as well as recording of critical, maladaptive thoughts, their corresponding cognitive distortions, and alternative, rational responses. Severity scaling may be used to further assess progress.[13-15]

(7) Regularly assess success or failure of coping strategies. Initial goals should be modest and success should be achievable with reasonable ease. When a strategy fails to produce success, it should not be regarded as a failure. Rather, it should be considered part of the learning process of what will and will not work for that particular individual. Cognitive-behavioral therapy should produce success within 6 to 8 weeks. If no progress has been made during this finite period, this approach is probably not going to be successful.

Because this is a psychologic approach to a symptom with a physical origin, patient resistance can be, and often is, significant. Such resistance must be diminished by establishing at the outset that the therapist is not ignoring the true physical nature of the tinnitus. The referring physician can be of great assistance in this regard.

It is often helpful to provide the patient with some proof of change. Biofeedback has been shown to be useful for some tinnitus patients.[16] In addition to facilitating relaxation, this technique has been shown to help identify and alter physical stress loci that may contribute to tinnitus exacerbation. An example is myogenic biofeedback directed at reducing bruxism or temporo-mandibular joint distress.

Cognitive-behavioral therapy is typically not the sole strategy used in my tinnitus-patient management program. Stress and maladaptive coping strategies are manifested in a variety of manners, both physical and psychological. Tinnitus patients are well served by education concerning the undeniable correlation between exacerbation of tinnitus perception and stress. Stress management courses are offered for groups or individuals through community health organizations as well as through trained professionals. Individuals can learn how certain physical functions can be altered using mental control. Relaxation, guided imagery, and self-hypnosis are examples of self-help methods used to help combat the stress, anxiety, and sleep disturbances associated with tinnitus by many patients. Self-help groups, with or without a professional facilitator, can employ certain aspects of cognitive-behavioral therapy.[10] The American Tinnitus Association provides education and lists of self-help groups to patients.

A recent addition to my treatment protocol is based on work reported by Jastreboff.[17] He suggests that a tinnitus patient can be *desensitized* by wearing a low-intensity, broad-band noise generator. He emphasizes that this noise is not employed as a mask. In fact, he reiterates that initially the tinnitus should be clearly audible along with the low-level noise signal. Based on principles of neural plasticity, Jastreboff believes that eventually, the brain *relearns* a pattern which will de-emphasize the importance of the tinnitus. He proposes that this *re-learning* will produce permanent central structural changes. These changes can be compared with the structural alterations already discussed in relation to pain.

A variety of disciplines are currently used to treat tinnitus patients. Not all clinicians feel equipped to provide the types of interventions discussed in this paper. In addition, direct counseling from a trained psychologist or psychiatrist may be in order. Tinnitus patients have been described as rigid, desperate, obsessive, or neurotic.[18] Many present with additional problems contributing to tinnitus distress (i.e., divorce, lack of money, dissatisfaction with their occupations). Some have a history of clinical depression.[19]

It is difficult to state definitively whether the emotional status of tinnitus patients existed before the onset of tinnitus, or whether it resulted from the tinnitus. The hearing health care professional must be prepared to recognize when outside referral to a mental health professional is appropriate. It is vitally important that trusted sources need to be established for the use of those professionals who do not have the time or training to provide the services personally.

The vehicle I currently employ to determine which treatment strategy is most appropriate for a given tinnitus patient is the use of a multidisciplinary team approach. A team that has been assembled at UCSF includes audiologists, otologists, temporo-mandibular joint specialists, psychologists, psychiatrists, physical therapists, biofeedback specialists, pharmacologists, and nutritionists. Each member of the team has contributed to the formation of a comprehensive tinnitus-patient intake form. Further responsibilities of the team members includes dissemination of relevant literature from their discipline to other team members, participation in a telephone network, acceptance of referrals for patients needing therapy in their particular speciality, and attendance at staff meeting (at which their speciality needs to be represented) arranged by the intake coordinator.

CONCLUSIONS

The implementation of a cognitive-behavioral component to my tinnitus-patient management protocol over a decade ago was encouraged by two factors: (1) frustration with the failures of long-term relief from other procedures; and (2) the desire to provide short-term, immediate relief.

Although other strategies have met with inconsistent and transient success, cognitive-behavioral therapy remains an appropriate staple as an adjunctive approach to virtually all other management procedures.

More data need to be collected demonstrating the efficacy of cognitive-behavioral therapy with tinnitus patients. This, like all aspects of tinnitus management, will be advanced more by cautious exploration than by the premature and proselytizing statements that often characterize the tinnitus literature.

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