Clinical Report

Vibroacoustic Treatment Protocol at Seinäjoki Central Hospital

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Abstract

Vibroacoustic (VA) treatment is offered at the Department of Rehabilitation as part of specialized healthcare in the South Ostrobothnia healthcare district. This clinical report describes VA protocol used at Seinäjoki Central Hospital, where VA has been used since 1992, and the protocol is based on the extensive development project on VA from 1996-1999 [1]. According to our clinical experience, the results are encouraging when VA is used as an additional treatment for patients with chronic pain, musculoskeletal problems, specific neurological problems such as spasticity, and sleep disturbances. Also, comorbidity with depression and anxiety is an additional indication for VA to be used with the patients. Systematic collection of clinical data and continuous development of clinical practice have been essential in establishing and maintaining the high-quality services [2]. Still, no randomized controlled trials have been conducted at this facility.

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Introduction

The Department of Rehabilitation in the South Ostrobothnia hospital district consists of a rehabilitation unit (since 2012), and outpatient clinics for occupational medicine and severe pain. Multidisciplinary rehabilitation consists of Vibroacoustic treatment (VA), physio-, occupational-, speech-, neuropsychological, and active music therapy services to all suitable patients on central hospital wards as well as in the hospital outpatient clinics. Rehabilitation services are mostly needed in neurological, psychiatric, orthopedic, and pediatric clinics. There are 124 professionals working at the rehabilitation unit. One VIBRAC-practitioner works full-time serving approximately 85-95 patients (approximately 870-940 visits) per year. 16% of the patients receive their referral from a physician at the healthcare center, occupational healthcare unit, or from a private practitioner, 24% from the rehabilitation ward at the central hospital, 21% from a physiatrist (at the outpatient clinic), 22% from a psychiatrist (at the outpatient clinic), and 17% from other clinics within the central hospital. The VIBRAC-practitioner has undergone certification training offered by the VIBRAC Skille-Lehikoinen Centre for Vibroacoustic Therapy and Research. In the hospital, the other trained practitioners include one psychiatric nurse, one pain psychologist, and one music therapist.

Patients are referred to VA by their physicians. Usually, those with chronic pain or musculoskeletal or neurological problems have already met a physiotherapist or other therapists before receiving VA. Before the VA is begun, the referring physician rules out any contraindications for initiating this treatment, e.g. acute inflammation, early pregnancy, general weakness, and low level of functioning; however, conditions will be always individually assessed. The VIBRAC-practitioner is responsible for planning the treatment protocol for each individual patient.

Typical treatment periods consist of 10-20 appointments, 1-2 times per week. The sessions take place in a specially equipped, soundproofed room. A "Next Wave Physioacoustic Therapy Chair" is the main device used for treatment. This recliner chair includes 6 audio speakers, one each at the neck and back, 2 at the thighs, and 2 at the calves, through which the patient is exposed to low frequency sound within the range of 27-113 Hz. The computer generates and controls the low frequency sinusoidal sound waves through the speakers. Another pillow-like device, the Taikofon FeelSound Player, is also in use. The sound stimulation is experienced as a

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massage-like sensation by eliciting sympathetic resonance in the muscles and other tissues, and side effects are rare. In the beginning and at the end of each session of the treatment period, the VIBRAC-practitioner and the patient have a therapeutic conversation about the patient's experience of the treatment and the effects thereof on daily living and on the patient's functionality.

Treatment Protocol and Standards

Referral and treatment structure

When a patient is referred for VAT, the VIBRAC-practitioner first becomes familiar with the patient's disease and symptoms through the medical report. Usually, a patient is referred for 10-20 sessions once a week but this may be increased to bi-weekly sessions or follow an intervallic structure, with sessions grouped into 2-3 phases throughout the year, depending on the patient's needs. The structure is assessed by the VIBRAC-practitioner upon arrival and according to his/her experiences of treatment processes.

During the *first visit*, the patient is interviewed and asked to fill in VAS (Visual Analog Scale) forms measuring 9 characteristics: general arousal, vitality, mood, relaxation, pain, quality of sleep, range of movement, limb temperature, and quality of life. Despite the reason for referral, these areas will be evaluated and the procedure has been proven to give valuable information on possible changes and improvement during the treatment process. The treatment program and suitable intensity (volume) are individually chosen according to the patient's symptoms and current state. *Music* may be listened to during the treatment, and can be either preferred music chosen by the patient, or recommended by the VAT-practitioner. The role of music is to support the nature of treatment program (aiming for relaxation, activation, or working with images), and also supporting the transfer effect to everyday life (using the same music at home). An extensive collection of music is available, and individual playlists may be compiled. Music can be listened to either via headphones or through speakers. The *ideal position* for the patient is then tested; some patients cannot lie on their backs, so they must receive the treatment in a seated position. The patient may also use a weight blanket, placed over them during the treatment – or alternatively a lighter blanket – thus helping the patient to relax and feel protected and warm. The treatment room itself has adjustable lighting and it can be dimmed for the patient's comfort during the treatment.

Treatment programs

The treatment programs usually last between 20-40 minutes. The practitioner designs the program based on the symptoms registered in the patient referral; the most common program used is a general relaxation program that centers around 40Hz. The general principle is that the programs start at lower frequencies and volume, so the patient can become accustomed to the sensation, thus reducing the risk of negative outcomes. The intensity of the program may be adjusted during the treatment if needed. Each aspect of the treatment program can be designed to suit the patient; the frequency, the nature of the program (activating or relaxing), the phasic and cumulative durations, and the strength of the stimulation on the neck, back, thighs, and calves. The practitioner stays in the room during the treatment to be able to immediately react to the patient's needs, to make any necessary changes, and to observe the patient's behavior.

After the sessions

After the treatment, the patient has the opportunity to recover or reactivate little by little. Also at this point, the practitioner will lead a reflective discussion on the patient's sensations and feelings, as well as the immediate effects that the patient experienced such as whether there were certain pain points that dissipated or were aggravated by the stimulation, or how the patient experienced the state of relaxation and music listening. Close relatives or a physiotherapist, with whom the patient is familiar, often communicate about possible changes in functionality. A new treatment program or intensity may be chosen based on these experiences and the feedback collected.

Assessment, evaluation, and reporting

Each visit is recorded using an electronic medical record system; for example, while treating insomnia, the program used, along with the changes made to the program, changes in functional capacity, and the music used, are recorded in this system. During the last sessions, the patient completes the final VAS measurements. These completed scales are then discussed with the patient as well as the treatment as a whole (over the 2-3 month period). Possible follow-up is also planned in the hospital or via private practice, if needed. The VIBRAC-practitioner then writes the final assessment, including whether the patient should be referred for further treatments, and returns this to the referring physician.

Concluding Remarks

Even though only a few randomized controlled trials (RCTs) have been published during the last decades of VAT, it is commonly used as an additional treatment for patients with spasticity, pain, sleeping disorders, depression, and anxiety. The active and systematic development of VAT-practices, follow-up procedures, and reporting has shown the possibilities of VAT as part of specialized health care and rehabilitation. According to our clinical experience, VAT can be safely given to patients with post-stroke pain and spasticity, as well as stable traumatic brain injury patients, and patients with certain musculoskeletal problems. VAT may play some role in achieving rehabilitation goals by reducing the symptoms from which patients are suffering. For more details on the clinical results of chronic pain patients with co-morbidities of depression and anxiety, see pages (187-197) of

this issue. Despite these reports and anecdotal practice-based evidence, more large-scale, well-designed, and high-quality studies (series of exploratory case studies, clinical trials, and RCTs) are needed [3].

References

1. Ala-Ruona E. *Fysioakustisen hoidon kehittämisprojekti Seinäjoen sairaalassa [Project for developing the physioacoustic treatment in Seinäjoki Central Hospital]*. Seinäjoki: South Ostrobothnia Health Care District, Physiatrics and Rehabilitation/Music Therapy; 1999.
2. Ala-Ruona E. Fysioakustinen hoito osana erikoissairaanhoitoa ja kuntoutustutkimusta [Physioacoustic treatment as a part of specialized health care and rehabilitation assessment]. In: Ala-Ruona E, Erkkilä J, Jukkola R, Lehtonen K, (eds.) *Muistoissa Petri Lehikoinen*. Jyväskylä: Suomen musiikkiterapiayhdistys ry; 2003: 173-193.
3. Punkanen M, Ala-Ruona E. Contemporary vibroacoustic therapy: Perspectives on clinical practice, research, and training [published online May 17, 2012]. Music Med doi: 10.1177/1943862112445324.

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