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Dance/movement therapy and changes in stress-related hormones: a study of fibromyalgia patients with video-interpretation

Eva Bojner-Horwitz, Ph.T., M.Sc. (Doctoral Student)^{a,c,*},
Tores Theorell, M.D., Ph.D. (Professor)^b,
Ulla Maria Anderberg, M.D., Ph.D.^{a,c}

^a Department of Public Health and Caring Sciences, Center for Environmental ill health and Stress (CEOS), Uppsala University and University Hospital, Uppsala Science Park, SE-751 85 Uppsala, Sweden

^b Department of Public Health Science, National Institute for Psychosocial Factors and Health, Karolinska Institute, Stockholm, Sweden

^c Department of Neuroscience, Psychiatry, Uppsala University and University Hospital Uppsala, Uppsala, Sweden

Introduction

Little is understood about how dance/movement therapy affects patients with fibromyalgia and other chronic pain patients. In addition, biological markers have not been studied in patients who have received dance/movement therapy. This study describes the measurement of stress hormones in relation to the effect of dance/movement therapy as interpreted by patients from viewing their movement patterns before and 8 months after the completion of treatment.

Fibromyalgia patients (FMS) suffer from long-lasting generalized pain and other physical and psychological symptoms such as headache, anxiety, fatigue, stiffness, psychological distress, concentration difficulties, and sleeping problems (Burckhardt, Clark, & Bennet, 1993; Henriksson, 1995). Two to seven percent of the population suffer from this disorder and 90% of FMS patients are women, making it one of our most common disorders among women (Wolf, Ross, Anderson, Russel, & Hebert, 1995).

Earlier endocrinology studies in FMS research indicate that patients have perturbations in their stress hormones such as high basic cortisol levels but

also low 24 hour mean levels of cortisol compared to healthy controls (Crofford, Pillemer, Kalogeras, Cash, & Michelson, 1994; Griep, Boersma, & deKloet, 1993). Moreover, FMS patients show high levels of neuropeptide Y (NPY), which co-exists with noradrenalin in the sympathetic nervous system and therefore can be regarded as a marker of sympathetic activity (Anderberg, Liu, Berglund, & Nyberg, 1999; Anderberg, 1999). The regulation of other neuropeptides, such as nociceptin and oxytocin, which regulate pain, well-being, and stress, have been shown to be affected in FMS patients (Anderberg, Forsgren, Ekselius, Marteinsdottir, & Hallman, 1999; Anderberg & Uvnäs-Moberg, 2000). The regulation of other neuropeptides and neurotransmitters such as substance P and serotonin have also been found to be changed in these patients (Russel et al., 1992; Vaeroy, Helle, Forre, Kass, & Terenius, 1988). These changes in hormones and peptides can reflect perturbations in the stress systems due to long term stress.

Many researchers have argued that creative arts therapies, among them dance/movement therapy, can be an important complement to other forms of therapy and pharmaceutical treatment for patients with long-lasting and chronic pain (Arn, 1991; Grönlund, 1994; Grönlund & Lumsden, 1991; Teszary, 1991). Creative art therapies are effective in promoting an emotional state of well-being and in helping the patient create symbols that represent emotional

* Corresponding author.

E-mail address: eva.bojner@stockholm.mail.telia.com (E. Bojner-Horwitz).

experiences. Application of these therapies may also lead to increased self-esteem, physical mobility and self-control (Hanna, 1995). The act of creating symbols for emotions, especially those grounded in negative life events, reawakens suppressed emotions and also helps the patient to deal with them. This may stimulate healing processes (Bojner-Horwitz et al., 2003a; Hanna, 1995). Studies show that FMS patients have often had stressful psychosocial life experiences both as children and adults (Anderberg, Marteinsdottir, Theorell, & von Knorring, 2000; Walker, 1997), and have low levels of self-esteem (Anderberg, Forsgren, et al., 1999). It is therefore possible that dance/movement therapy could have positive effects on these patients with corresponding benefits to their biological health status.

Dance/movement therapy includes several different dimensions that theoretically have the potential to relieve conditions of strain, stress, and pain in fibromyalgia patients. These various dimensions, which are of a physical, emotional, cognitive, and cultural nature, may therefore be more effective than other types of treatment for this patient group. Several researchers argue that through dance, patients can develop an increased sense of self control which in turn can lead to decreased feelings of helplessness and anxiety, feelings that can contribute to the state of stress as well as the experience of pain (Hanna, 1995). The language-like quality of dance movements can be used to express ideas and feelings such as anger and fear from both the past and present, on both conscious and unconscious levels (Hanna, 1979, 1995).

In an earlier study we used video-interpretation as a method to measure changes in movement patterns before and after dance/movement therapy in FMS patients. The results of that study revealed that the FMS patients were affected by viewing their own movements on video and that they identified changes in their movement patterns after a period of 2 months of dance/movement therapy treatment (Bojner-Horwitz et al., 2003b). In the current study we used the same video-interpretation technique in order to identify any relationships between biological markers and movement patterns. Our research question was if it would be possible to see corresponding changes in stress-related hormones and movement patterns after dance/movement therapy treatment.

Method

Participants

Data were collected over a period of 14 months. The treatment period consisted of the first 6 months,

and follow-up data were collected 8 months after the end of treatment. Thirty-six female patients with a mean age of 57 years (SD 7.2 years) diagnosed with fibromyalgia were consecutively recruited from rheumatologists within the Stockholm Rheumatological District. The Stockholm Rheumatological District treats patients from throughout Stockholm County.

All 36 female FMS patients were randomly assigned to either treatment or control groups. The treatment group comprised 20 patients and the control group, 16 patients. The four additional patients in the treatment group were assigned to counteract attrition in this group, in order to maintain and secure statistical power. All patients met the diagnostic criteria for FMS according to norms established by the American College of Rheumatology (ACR) in 1990:

1. Experiences of general pain (lasting more than 3 months) including pain from all four body quadrants: left and right sides and upper and lower body halves as well as axial pain such as pain from the cervical, thoracic or lumbar areas of the back;
2. Palpation pain in 11 of 18 "tender points" at specific bilateral locations on the body.

The patients in the control group did not receive treatment during the 14-month study period. However, after the study was completed they were invited to take part in dance/movement therapy. The elapsed time from established diagnosis of FMS to study participation averaged 7 years for the treatment group, and 8.7 years for the controls, but the duration of pain was equivalent and much longer for both groups (>12 years).

All patients were given oral and written information about the nature of the study and gave their consent for participation in the study before they were randomly assigned. Patients undergoing treatment with acupuncture, TNS, stronger analgesic (e.g., dextropropoxiphen) anti-depressives, other psycho-pharmacological drugs, or psychotherapy were not included in the study. Also excluded from the study were patients with these characteristics: (a) patients with difficulty in speaking or understanding Swedish; (b) patients with serious angina pectoris; (c) patients who had experienced a stroke; (d) patients with alcohol or drug abuse problems; and (e) patients with serious depression. The Regional Research Ethics Committee of the Karolinska Institute in Stockholm, Sweden, approved the study on February 2, 2001 (ref. no. 00-440).

Measures

Over the course of the study (14 months), data were collected on the following measurements in both

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