Psychophysiological assessment of a therapeutic concert

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Abstract. Therapeutic concert, a kind of music therapy was provided to patients with fibromyalgia syndrome, and its efficacy psychophysiological was evaluated by power spectral analysis of heart rate variability (HRV). The catharsis took place in 4 of 6 cases that were treated by the therapy and reduced pain. The observations indicate that catharsis is an important factor for performing therapeutic concert in music therapy. © 2006 Elsevier B.V. All rights reserved.

Keywords: Music therapy; Therapeutic concert; Chronic pain; Fibromyalgia; Catharsis

1. Introduction

In our previous research, we have reported the following: on account of the achievement of music therapy, the pain decreased and the tension of sympathetic nerve was relieved [1]. Thus, music therapy is considered to be effective for the relaxation of sympathetic nerves and for curing pains [2].

Fibromyalgia syndrome (FMS) is a chronic pain disease. Because of the various factors causing this disease, such as biological, psychological, social and existential, the establishment of the methods of its diagnosis and treatment is extremely difficult. Therefore, in the present research, examination was made of the approach, not of the pathogenesis, but of the salutogenesis [3]. In other words, instead of paying attention to problems pertaining to patients, we tried to activate their attentive emotion, regarding it as the resource. Therefore, the therapist of the music therapy made an effort to tune in the patient's emotion utilizing the individualized approaches.

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2. Materials and methods

To 6 patients with FMS, music therapy, the therapeutic concert, was provided at a place of balneotherapy in order to determine its efficacy psychophysio logically. Balneotherapy is a kind of water therapy in the hot spa of a rural area near the seaside, which introduces to a patient a change of air and relaxation in mind and body, especially muscle relaxation. Patients stayed at a hot spa for about 4 weeks.

Two patients were selected as the subjects of the music therapy. The major problem common to them was that both patients were highly sensitive in nature and therefore got a habit of over-adaptation. Since they had delicate sense and high sensitivity in themselves, they were considered that they might be led to the awareness of “taking things as they are”. Therefore, balneotherapy was introduced and then combined with the music therapy. The pianist, a music therapist, played the tune, trying to support them and sympathize with the patient’s emotion. The pianist started to play the piano in a low, soft sound so as to correspond to the patient’s energy and spirit. The pieces chosen and played by the pianist were well-known Japanese tunes and famous works of classical music. The ending part of each piece, namely the cadenza, was played so that the patient’s feeling can be supported and synchronized.

Before and after the therapy, patient’s pain and fatigue were evaluated by visual analogue scale (VAS), and throughout the course of the music therapy, power spectral analysis of heart rate variability (HRV) was recorded and analyzed mainly in high frequency (HF) amplitude and low frequency (LF)/HF ratio statistically [4].

3. Results

Of the 6 patients, 4 were evaluated of the efficacy, and catharsis was observed during the course of music therapy. However, no catharsis was seen in the remaining 2 patients.

Two contrasting cases were shown; in case 1, the patient felt that she reached an impasse in life, and in case 2, the patient felt that she despaired in life, finding no hope for the future. The major problem common to these two patients was that both patients were highly sensitive in nature and therefore got a habit of over-adaptation. Since they had delicate sense and high sensitivity in them, they were led to the awareness of “taking things as they are”. In order to relax their muscles, the balneotherapy was introduced and then combined with the music therapy. These two cases were contrasted.

The pain score as assessed by VAS: in case 1, the pain score observed to decrease from 85 mm/100 mm to 24 mm/100 mm; while in case 2, it showed only a small decrease from 83 to 56. Also, the fatigue score as assessed by VAS: in case 1, it showed a decrease from 74 to 15; while in case 2, it showed only a small decrease from 79 to 62.

In case 1, the elevated LF/HF ratio decreased with an increase in HF amplitude, which was considered prohomeostatic efficacy. This is because LF/HF ratio is considered as a parameter of sympathetic nervous function, besides HF amplitude being a parameter of parasympathetic nerve function [4].

The time course changes in autonomic response during the music therapy were divided into four phases (Fig. 1; left) as follows: introductory phase, sedating phase, catharsis phase and ending phase. In the introductory phase, both the sympathetic and parasympathetic nervous systems were excited, while gradual sedation was observed after entering the sedating phase.
Fig. 1. The changes of spectral analysis of ECU in case 1 (left) and case 2 (right).
Fig. 2. The changes of spectral analysis of ECG in case 1 ($p<0.05$ vs. introductory phase, $p<0.01$ vs. introductory phase).
Fig. 3. The changes of spectral analysis of ECG in case 2 ($p < 0.05$ vs. introductory phase, $p < 0.01$ vs. introductory phase).
In case 1, catharsis phase was observed obviously and typically. During this phase, she cried out with tears for a time as if she were drunk in the streams of music. But no catharsis was seen in case 2. This may be related to the fact that the patient of case 1 loved music very much.

On the other hand, the patient of case 2 did not have so much interest in music, and probably from this reason she did not experience catharsis by listening to music. Therefore, HRV showed almost no changes the course (Fig. 1; right) and revealed no homeostatic efficacy.

The changes of autonomic nervous reactions by HF amplitude and LF/HF ratio in cases 1 and 2 are shown statistically simplified, divided according to the phases; the parameters are represented in each phase by mean ± S.E.M., and each phase was compared with each other by t test (Figs. 2 and 3). The biggest difference between them is that in case 2 the catharsis phase was lacking.

4. Discussions

In this study, only two cases are shown and evaluated so the discussion is not easily introduced and limited. In the two cases presented here, the delicate emotion of the patients appears to be their resources in the context of salutogenesis. Also, during the music therapy, the therapist confirmed the following: in the sedating phase, response of autonomic nervous systems was sedated. In the catharsis phase, both sympathetic and parasympathetic nervous systems were excited. The emotion was sedated after the excitement but the excitement of autonomic nervous systems continued during this phase. The case 2 was absent in catharsis phase, showing poor efficacy in pain and fatigue. Whether or not the patient can experience catharsis from the music therapy it greatly depends on how the patient likes music and how the player can synthesize tuning in the patient's spirit. Catharsis can be regarded as an important factor for completing music therapy.

Generally, music therapy is regarded as a supportive psychotherapy in terms of its efficacy [2]. However, music therapy has physiological efficacy on the body as well [1]. From our study, it was demonstrated that, if it is effective, the music therapy produces homeostatic efficacy to mind and body. Music therapy is considered to exert actions not only on the autonomic nervous systems but also on the whole homeostatic systems.

References