

EFFECTS OF SHIATSU MASSAGE ON RELIEF OF ANXIETY AND SIDE EFFECT SYMPTOMS OF PATIENTS RECEIVING CANCER CHEMOTHERAPY

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Abstract : Nine patients scheduled for cancer chemotherapy were grouped into two ; the strong anxiety group and the weak anxiety group. The relaxation effects of shiatsu massage for these two groups of patients were compared using STAI anxiety score, physical and psychological relief of side effect symptoms, relaxation (RE) scale and skin temperature. The strong anxiety group showed decline in anxiety score after intervention, indicating slight relaxation effects. Both groups had big expectation for psychological relaxation effects of massage. Physical symptoms could not be relieved. In the weak anxiety group, shiatsu massage significantly increased RE score, showing relaxation effects. There was little change in peripheral skin temperature.

Above results proved that shiatsu massage would relieve anxiety. It is desired to use shiatsu massage as well as attentive listening to relieve anxiety in the clinical settings.

Key words : Cancer chemotherapy, Anxiety, Side effect symptoms, Shiatsu massage, Relaxation
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INTRODUCTION

Bothering physical symptoms of patients receiving cancer chemotherapy (hereinafter called chemotherapy) include vomiting, nausea, lethargy, hair loss and dysgeusia¹⁾. These physical symptoms are enhanced by anxiety. Rhodes revealed the relationship between nausea and anxiety in his research²⁾. Physical symptoms of side effects and anxiety during chemotherapy interfere daily living and lower quality of life of the patients, which may lead to withdrawal from the treatment³⁾. It is important to increase patient's QOL during chemotherapy in order to enhance treatment effects.

One of the techniques to improve QOL of a patient is relaxation which produce physical and psychological comfort. Relaxation techniques include progressive muscle relaxation, foot bath, shiatsu massage, whose physical and psychological relaxation effects have been

proven by different researchers^{4~7)}.

This time, the authors decided to study effects of shiatsu massage since it requires no tools nor instruments. The objective of the study is to elucidate the effects in decreasing level of anxiety of patients receiving chemotherapy and relieving side effect symptoms through shiatsu massage intervention so that the technique will be used in the clinical nursing practice. To identify the level of anxiety and elucidate the effects of shiatsu massage so that the technique will be used effectively in nursing practice.

1. To determine the effect of anxiety relief
2. To elucidate the effect of physical and psychological relief of side effect symptoms
3. To identify the physical effect through changes in skin temperature

WORKING DEFINITION OF TERMINOLOGY

Relaxation is the psychological and physical relief

of tension or stress. It represents decrease in tension, weakening of sympathetic effects and enhancement of parasympathetic effects.

Shiatsu massage is application of such stimulation as rubbing, kneading and compressing to the surface of the body using clinician's hands and fingers. It is the techniques to adjust the body conditions.

PATIENTS AND METHODS

Subjects (Table 1)

Nine patients of hematological/hematogenous tumor or lung diseases hospitalized in the medical ward of G hospital who gave us informed consent are selected. The average age was 55.9 with standard deviation of 16.6. They had experiences of cancer chemotherapy before and were expected to have another chemotherapy without any symptoms of fever. The chemotherapy agents they used were alkaloids (42.1%), alkylating agents (21.1%), antibiotics (21.1%) and others (15.8%). The state anxiety was examined before any intervention of shiatsu massage and top 4 score patients were grouped as strong anxiety group and the other 5 were grouped as weak anxiety for comparison.

Intervention techniques and analysis

Subjective evaluation

Evaluation of STAI anxiety scale

The state trait anxiety inventory (hereinafter called STAI) is an anxiety scale using the questionnaire developed by Spielberger etc.⁸⁾. It was developed to measure anxiety in terms of state anxiety (transient anxiety) and trait anxiety (personality related anxiety).

There are 20 questions for state and trait anxieties respectively. All the questions are scored with four point scale and the highest score for each item is 4 and the lowest is 1. The highest total score is 80 and the lowest is 20. The higher the score, the stronger anxiety the person has. We thought that state anxiety is the adequate index to measure transient anxiety of chemotherapy.

Table 1 Attributes of Subjects

| Level of Anxiety | Disease | Age | Sex | No.of Chemotherapy | Truth Telling |
|------------------|------------|-----|--------|--------------------|---------------|
| Strong | Leukemia | 60 | Male | 3 | Yes |
| | Lymphoma | 56 | Male | 2 | Yes |
| | Lymphoma | 41 | Male | 2 | Yes |
| | Lung Tumor | 45 | Male | 3 | Yes |
| Weak | Lung Tumor | 72 | Male | 2 | No |
| | Lymphoma | 71 | Male | 4 | No |
| | Leukemia | 20 | Male | 4 | Yes |
| | Lung Tumor | 70 | Male | 2 | Yes |
| | Myeloma | 68 | Female | 2 | No |

Physical and psychological relief of side effect symptoms

Relief of such physical symptoms as headache, diarrhea, constipation, vomiting and nausea and psychological effect to change air and to reduce stress were studied. The instrument is made up of 5 point Likert scale. The highest score for each item is 5 and the lowest is 1. The higher the score, the more relieving it is. The total score for physical effects is 25 and that for psychological effect is 10.

Subjective evaluation of relaxation

The rating scale of emotion as defined in terms of relaxation (hereinafter RE scale) is used. This is the 4 item scale of relaxation developed by Ichiro Agari⁹⁾. The maximum score for each item is 11 and the minimum is 1. The highest total score is 44 and the lowest is 4. The higher the score is, the more relaxing it is.

Objective physiological evaluation

Continuous measurement of skin temperature

LT8 data collection portable thermister (hereinafter called skin thermometer) was used to make continuous 1 hour measurement with 1 minute interval. Data then was processed with computer.

Procedure

Pre-intervention evaluation of STAI anxiety scale and physical and psychological relief effects were performed 2-3 days before chemotherapy. Skin temperature was continuously measured using a continuous skin thermister worn on the ring finger 15 minutes before, during and 15 minutes after intervention. Shiatsu massage was given to hands and feet for 30 minutes in the morning and in the afternoon. The intervention was repeated for 4 days. To maintain uniformity, the techniques were taught by the specialist and video taped for practice. The evaluation of symptom relief during intervention was performed on the second day. Statistics Excel was used for data analysis and t-test was performed.

RESULTS

Change in state anxiety by shiatsu massage (Fig.1,2)

State and trait anxieties showed weak correlation with correlation coefficient of 0.65 ($p < 0.1$ $n = 9$) as shown in Fig.1. However, no significant correlation was observed after shiatsu massage intervention with the coefficient of 0.42.

The highest state anxiety score of the subject before intervention was 51 and the lowest was 22 with the average of 41 (standard error = 3.5). The average state anxiety score for the strong anxiety group before inter-

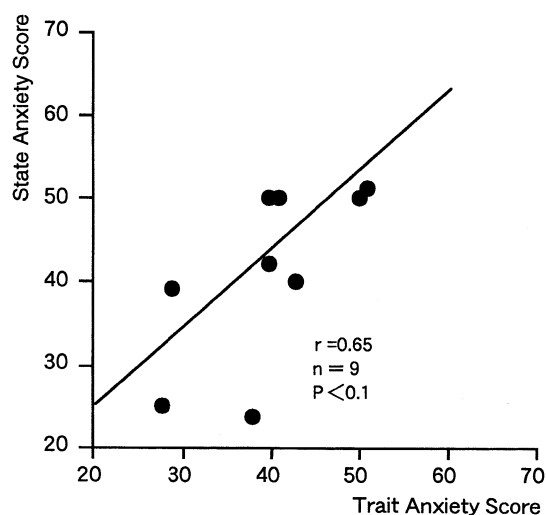


Fig. 1 Relationship between State Anxiety and Trait Anxiety before Intervention of Shiatsu Massage

State anxiety is a transient anxiety, while trait anxiety is an anxiety caused by personal character. The highest score for each is 80 and the lowest is 20. The higher the score, the greater the anxiety. There is a weak correlation between state anxiety and trait anxiety.

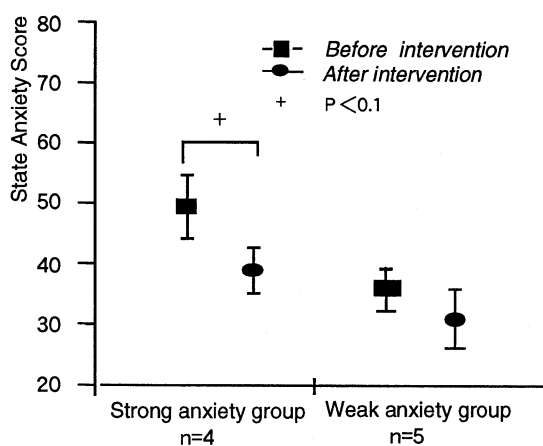


Fig. 2 State Anxiety before and after Shiatsu Massage Intervention

The group with stronger anxiety showed reduction in score of 11.3 after the intervention as compared with before the intervention. T-test proved that the difference was significant.

vention was 50.3 (standard error=5.2) and that after intervention was 39.0 (standard error=3.9). Anxiety was found to be reduced after intervention and t test proved that the difference was significant ($p=0.09$). For the weak anxiety group, the average score before intervention was 33.6 (standard error=4.6) and that after intervention was 32.0 (standard error=3.5). The anxiety was also declined for this group but not significantly.

Relationship between the level of anxiety and side effect symptom relief by shiatsu massage (Fig.3)

The relief of physical side effect symptoms by intervention for the strong anxiety group was 9.5 against 25 full score before intervention. The score during the intervention (2nd day) was 12.0 and that after intervention was 13.0. For weak anxiety group, the score before and during intervention was 14.0 and that after intervention was 15.0. There were slight increase in the score for both groups.

The relief of psychological symptoms were as follows: The strong anxiety group showed the pre-intervention score of 8.8 against full score of 10. The score during intervention was 9.5 and that after the intervention was 8.5. For the weak group, the scores were 9.4, 9.8 and 9.4 respectively. Both groups presented the highest scores during the intervention. For both groups, the effect was significant in terms of change of air and stress relief. During the intervention, the mild effect of shiatsu massage was observed.

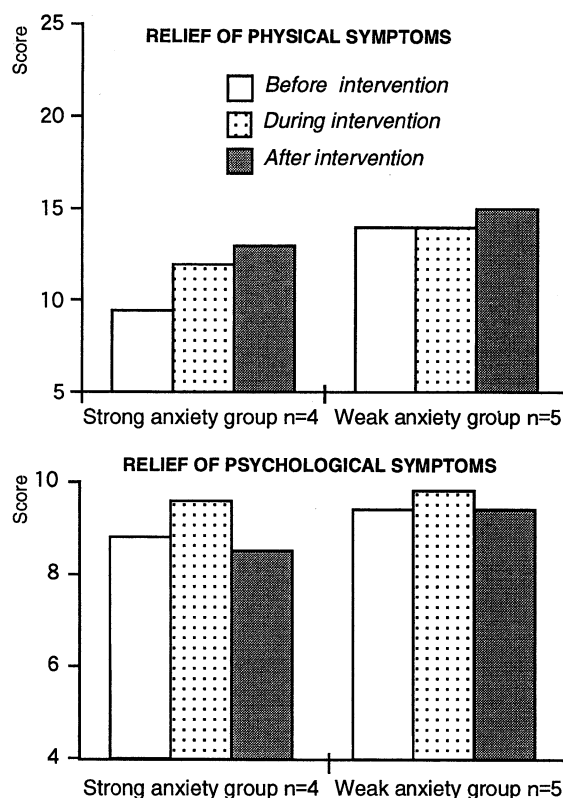


Fig. 3 Relaxation Score before and after Shiatsu Massage Intervention

The highest relaxation score was 44 and the lowest 4. The higher the score, the more relaxed a patient is. The less anxious group increased the score by 4.1 after the intervention, which was significant by t-test.

Relationship between anxiety level and RE score change by the intervention (Fig.4)

For the strong anxiety group, the average score against full score of 44 was 35.6 before the intervention of shiatsu massage and 39.4 after the intervention. There was a slight relaxation effect observed but not significant in t-test. For the weak anxiety group, the score before the intervention was 31.1 and that after the intervention was 35.2 with significance in t-test ($p=0.01$). Thus relaxation effect was quite remarkable for the mild anxiety group.

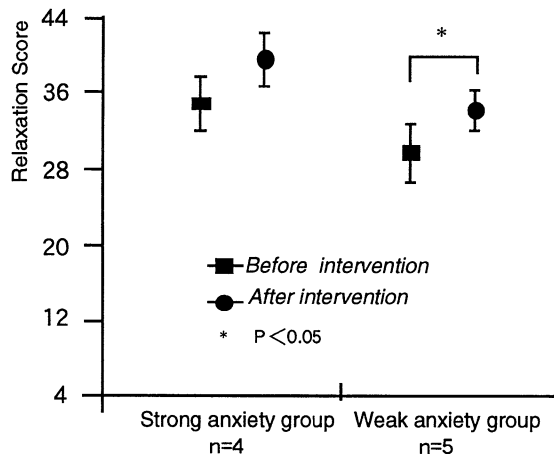


Fig. 4 Side Effect Symptom Relief Effect by Shiatsu Massage Intervention

Total score of symptom relief effect for physical side effect of cancer chemotherapy (headache, diarrhea, constipation, nausea and vomiting) is 25 and that for psychological symptoms (change of air, stress relief) is 10. The higher the score, the more effective the intervention is.

Relationship between anxiety level and continuous skin temperature (Fig.5)

Average skin temperature 15 minute before the intervention (shiatsu massage) was considered as 0 to analyze temperature change through intervention. The average pre-intervention temperature for the severe anxiety group was 33.32°C and the temperature increased during the intervention, showing slight relaxation effect. For the weak anxiety group, the average temperature before the intervention was 34.30°C and the temperature decreased during the intervention. They presented gradual increase in temperature after the intervention. The change was not significant for either group.

DISCUSSION

Shiatsu massage promotes circulation and calms the nervous system to induce relaxation and to increase in peripheral skin temperature. For pain and discomfort, the intervention controls esthesia to make a person calm and comfortable^{9,10}. The authors paid attention to this effect and decided to evaluate the effects of shiatsu massage to relieve anxiety and side effects of cancer chemotherapy. In this study, STAI, RE scales and subjective evaluation of physical and psychological symptom relief were used to measure the effectiveness of intervention.

Rhodes et al.²⁾ and Arakawa¹¹⁾ reported that there exists positive correlation between state anxiety and trait anxiety in patients receiving cancer chemotherapy. In this research, we confirmed weak correlation though the number of subjects was small. Those who tend to

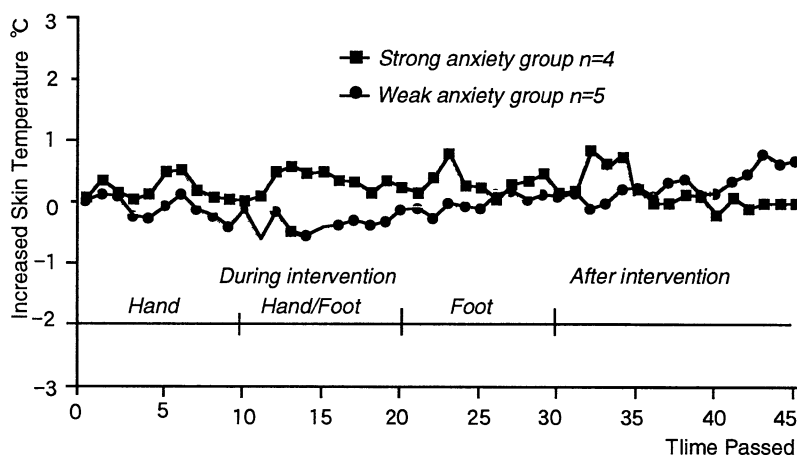


Fig. 5 Change in Skin Temperature by Shiatsu Massage Intervention

The change of temperature up to 15 minutes after the intervention was studied against the baseline skin temperature 15 minutes before the intervention. The temperature increased slightly during the intervention among those with strong anxiety. The change, however, is not significant for both groups.

become anxious increased their anxiety by the mere fact that they will receive chemotherapy. Those who have repeated chemotherapy think of the past experience of pain, which further enhances their anxiety.

In this study, we found that the strong anxiety group experience some relief by shiatsu massage. It seems effective to offer attentive listening, sufficient information of treatment and such intervention as shiatsu massage for the situation anxiety associated with cancer chemotherapy. For cancer patients, it is important not only to relieve anxiety of chemotherapy but also to relieve anxiety of laboratory tests and other examinations through various means.

The effects of shiatsu massage on physical symptom relief was not clear in both groups. Arakawa discussed that there was positive correlation between anxiety and chemotherapy side effects¹¹⁾. Nakai et al had different opinion and stated that there were no significant correlation between side effects and anxiety¹²⁾. In this study, the side effects were controlled by antiemetics and laxatives. This, on the other hand, masked the effects of intervention since no remarkable side effects were present. We feel the strong need to continue this study.

Many subjects, on the other hand, believed that shiatsu massage is effective in psychological relaxation such as stress relief and change of air. We cannot deny that their knowledge of the effects of shiatsu massage gave them some suggestive effects. Shiatsu massage also have some comfort effect of touching. The act of touching gives people sympathy, friendliness and trust. Those who are touched enjoy emotion of comfort^{13,14)}. In this study, psychological effect of the intervention is partly due to this effect of touching.

It became clear that it is important to continue and expand this study by increasing the number of subjects and subcategorizing them by the sex and the age. In subjective evaluation of relaxation, both groups showed increase in score after the intervention. The effect was more prominent for weak anxiety group. The result suggests that shiatsu massage is an effective nursing technique to relieve mild anxiety.

There was no remarkable change observed in such objective evaluation as peripheral skin temperature for both groups. Strong anxiety group, however, had skin temperature risen during the shiatsu massage and declined 4 minutes after intervention. The result indicates that the more anxious the patients are, the lower the ability of self control to relax. They may need progressive muscle relaxation and other self-controllable techniques rather than passive shiatsu massage to relieve anxiety and symptoms.

CONCLUSION

To identify the level of anxiety and elucidate the effects of shiatsu massage so that the technique will be used effectively in nursing practice. Nine patients scheduled for cancer chemotherapy were grouped into two; the strong anxiety group and the weak anxiety group. The strong anxiety group showed decline in anxiety score after intervention, indicating slight relaxation effects. Both groups had big expectation for psychological relaxation effects of massage. Physical symptoms could not be relieved. In the weak anxiety group, shiatsu massage significantly increased RE score, showing relaxation effects. There was little change in peripheral skin temperature.

Above results proved that shiatsu massage would relieve anxiety. It is desired to use shiatsu massage as well as attentive listening to relieve anxiety in the clinical settings.

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