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Physical effects of *Anma* therapy (Japanese massage) for gynecologic cancer survivors: A randomized controlled trial☆

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HIGHLIGHTS

- This is the first randomized controlled trial on the effects of *Anma* therapy (Japanese massage).
- *Anma* therapy reduced subjective physical complaints in gynecologic cancer survivors.
- It is possible that *Anma* therapy inhibits the sympathetic nervous system.

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ABSTRACT

Objectives. Cancer survivors often have physical and psychological complaints after standard cancer treatment. We conducted a randomized control trial to evaluate the physical and psychological/emotional effects of *Anma* therapy (Japanese massage, AMT) in gynecologic cancer survivors. The primary objective was to verify the effects of 8 consecutive weeks of weekly AMT. The secondary objective was to confirm the immediate effects of single-session AMT. We report here results of the physical effects of AMT.

Methods. Forty participants were randomly allocated to an AMT group that received one 40-min AMT session per week for 8 weeks and a no-AMT group. The primary endpoint was severity of subjective physical complaints assessed using a visual analogue scale (VAS). Secondary endpoints were urine and saliva analyses and psychological/emotional questionnaire scores.

Results. In the primary analysis, least-squares means (LSM) estimates of VAS score improvement over the 8 weeks were −21.5 (95% confidence interval [CI], −30.1 to −12.8, P = 0.0017) in the AMT group (n = 20) and 0.8 (95%CI, −7.7 to 9.2, P = 0.89) in the no-AMT group (n = 20). The difference in the LSM estimates between the groups was −22.2 (95%CI, −34.4 to −10.1, P = 0.0007). There were significant differences in VAS score and urinary epinephrine between before and after the intervention session, demonstrating the superiority of AMT.

Conclusions. A single AMT session reduces the severity of subjective physical complaints and might inhibit the sympathetic nervous system in gynecologic cancer survivors. Receiving weekly AMT sessions for eight weeks effectively continues to reduce the severity of subjective physical complaints.

1. Introduction

Cancer has been the leading cause of death in the Japanese population since 1981. Average yearly estimates for the period 2025–2029 put the number of cancer deaths at 230,000 men and 160,000 women and cancer incidence at 530,000 men and 390,000 women in Japan [1]. Both these estimates are expected to slow after 2015 for men; however, they are expected to continue increasing at the present rate for women, especially with regard to incidence of cancers in the oral cavity and pharynx, kidney and urinary tract, uterus, lung, pancreas, and cervix

☆ Trial registration: This trial was registered with the UMIN Clinical Trials Registry as application UMIN000009097 on October 12, 2012: Effects of continuous traditional Japanese massage therapy (*Anma* therapy) for cancer survivors: a randomized controlled trial, https://upload.umin.ac.jp/cgi-open-bin/ctr/ctr.cgi?function=brows&action=brows&type=summary&recptno=R000010670&language=E.

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[1]. Also, because early detection and progressive treatment options have improved the prognosis of cancer patients and increased the number of cancer survivors in Japan [2], interest has been shifting from radical treatment options toward ensuring a better quality of life (QOL) to cope with the disease [3].

Massage therapy is one of the most commonly used complementary and alternative medicines for cancer patients and survivors to manage physical, emotional, and psychological complaints. In relation to gynecologic cancers, Mirabeau-Beale et al. revealed that massage is one of the most commonly used modalities by ovarian cancer survivors primarily to improve QOL [4]. Also, according to Matulonis et al., of the 22.4% of ovarian cancer survivors who used massage to treat their cancer, 100% used it to improve QOL, 61.5% used it to improve side effects, and 15.4% used it for movement and physical therapy [5]. Actually, 20% of ovarian cancer survivors have reported long-term side effects of treatment, including problems related to abdominal and gynecologic symptoms and neurotoxicity [6]. Ovarian cancer survivors have also reported significant concerns related to pain and other complaints [7].

One of the most common and popular forms of complementary and alternative medicine in Japan is Japanese massage therapy, or *Anma* massage therapy (AMT). It has long been used by healthy persons, the elderly, disease-free survivors, patients with disease, and cancer survivors to promote health, manage and cure various complaints, and prevent disease. However, because the effectiveness of AMT has not been established for cancer survivors and patients, they must determine for themselves, based solely on anecdotal information, whether or not to receive AMT. To address this situation, scientific studies on AMT are needed.

After conducting a preliminary study for cancer survivors who had undergone surgery for uterine cervical or endometrial cancer (FIGO stage Ia1 – Iia) and verifying the effects of AMT [8], based on our preliminary findings we designed and conducted the present randomized controlled trial. The design has been published previously [9]. The primary objective of this trial was to verify physical and psychological/emotional effects of 8 consecutive weeks of weekly AMT in gynecologic cancer survivors. The secondary objective was to confirm the physical and psychological/emotional immediate effects of single AMT intervention session.

Our hypotheses were that AMT for gynecologic cancer survivors would: (H1) improve more subjective physical complaints appearing after standard cancer treatment than in controls immediately after a single intervention session, and these effects would be sustained by 8 consecutive weeks of once-weekly AMT sessions; (H2) enhance psychological and mood states more so than in the controls; (H3) potentially improve coping styles in cancer survivors through the relationship with a massage therapist; and (H4) change the values of some kinds of biochemical markers related to stress release, the autonomic nervous system, or the immune system.

2. Methods

This trial was approved by the Medical Ethics Committee of Tsukuba University of Technology, Japan, where the study setting and coordinating office were located, on September 27, 2012 (Approval No. 5).

Trial gynecologists who worked at another hospital recruited participants who met the eligibility criteria, and they confirmed at every clinical session that participants did not fall into the exclusion criteria. Trial inclusion criteria were: (a) histologically confirmed uterine cervical, endometrial, ovarian, fallopian tubal, or peritoneal cancer in the past; (b) no recurrence of such cancer for ≥3 years since finishing standard medical treatment; (c) ≥20 years of age at the date of registration to the trial; and (d) eligibility for the trial confirmed by gynecologists responsible for the patient. Trial exclusion criteria were: (a) current active infection(s); (b) serious concurrent disease of the heart, liver, or kidney; and (c) severe mental disorder(s). Next, the gynecologists sent introduction forms by facsimile to the coordinating office. After receipt, the coordinating office scheduled a meeting date with each cancer survivor to provide them with trial information (oral and written) at the coordinating office. Patients subsequently submitted a consent form to participate in the trial by hand or via facsimile.

After finishing enrolment, randomization was performed. The trial statistician generated the allocation sequence by block randomization. However, allocation adjustment factors were not set in the trial due to currently insufficient evidence on factors influencing the effectiveness of AMT. Before the trial began, the trial statistician created a table of randomized assignment for management by 2 employees at the coordinating office.

2.1. AMT group

This group received treatment by AMT. Protocol treatment was completed once the participant finished receiving the eighth and final 40-min AMT session. Sessions were given once a week during the consecutive 8-week intervention period. Following the AMT protocol, participants were given a full body AMT session that excluded the face, head, and abdomen while lying on a massage table. We conducted assessments before the first AMT session (pre-session, baseline), after the first AMT session (post-session), and before the last (8th) AMT session (8-week follow-up).

2.1.1. AMT protocol

First, the massage therapist interviewed the participant about subjective physical complaints appearing after standard cancer treatment and then manually checked the affected area(s) for muscle tension, stiffness, induration, tenderness, knocking pain, malalignment of the spine, edema, and area of pain/discomfort/palsy, and other such conditions. Second, while the participant lay on the right side of the body on a massage table, the left side of the body was massaged. The massage started at the upper shoulder and then moved to the back, lower back, upper limb (shoulder joint to wrist joint), hand (carpus to finger tips), and neck (superior nuchal line along the neck to the side of the 7th cervical vertebra). The massage then returned to the trunk (shoulder to lower back) following these areas: buttock, lower limb (gluteal fold to ankle joint), and foot (heel to toes). Third, while the participant was lying on the left side, the opposite side of the body was massaged in the same order. Finally, while the participant was lying in a prone position, the massage was repeated briefly on the shoulders, back, lower back, lower limbs, and feet simultaneously on both sides. During the massage, the therapist focused the massage on specific locations related to the participant's physical complaints. This massage procedure was the same as that used in our previous studies [8,10], using massage techniques considered standard versions of common AMT and as described in detail by Kimura [11]. AMT mostly targets the muscles by kneading (thumb, 2-finger [thumb and forefinger], 4-finger, carpus, palm, and palm grasp), which is the most commonly used technique. Thumb kneading is most frequently used, followed by pressing (thumb, carpus, and palm), and then with lesser amounts of stroking (2 hands, thumb, and fingertips). AMT is performed through the clothing, with stimulation intensity applied according to each patient's range of comfort. A therapist with a national massage practitioner license from Japan and >20 years of experience performed all massage sessions to avoid differences in technical capabilities.

2.2. No-AMT group

The control group was followed as usual by their medical doctors and did not receive AMT treatment. They met with the massage therapist at the coordinating office on the first day of their scheduled trial period to receive a 40-min semi-structured chat intervention with no massage while seated. Assessments were conducted before the intervention session (pre-session, baseline) and after the intervention session (post-session). Participants returned to the office on the last day