

Effects of Touch and Massage Care in Advanced Alzheimer Patient: A Pilot Case Report

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Abstract

Objectives: In the advanced stages of Alzheimer disease (AD), communication abilities are lost, and the patient is expressionless, cannot make utterances or move independently, and, in many cases, is bedridden. Though touch and massage have usually been used as one of the occupational therapy intervention methods for various terminally patients, little has been studied about its effect on advanced AD patients.

Methods: The patient was a woman in her late 80s with the most severe level of care need and dementia due to AD. Once a month, over 5 months, unscented jojoba oil was applied to the patient's hands while she was seated on a wheelchair with her hands on a table, and she received 10 minutes of touch and massage care on each hand, for a total of 20 minutes. Salivary amylase activity was measured just before and immediately after every intervention session as a non-invasive indicator which reflects psychological stress.

Results: The average salivary amylase values before and after the 5 times that the patient received the touch and massage care were 185.6 KIU/L (SD = 44.5) and 112.8 KIU/L (SD = 38.3), respectively. A significant decrease was observed ($P = 0.043$). As for the patient's appearance during the sessions, when she was helped to move her arms onto the tabletop, her arms and legs sometimes stiffened, and she flexed them intermittently, however, the stiffening diminished after the massage began.

Conclusions: Since this was a pilot case study with a single patient, the results cannot be generalized. However, the study showed that touch and massage care could provide pleasant stimulation for an advanced AD patient with verbal communication difficulties and offered the possibility of reducing physical and emotional stress; therefore, it provides important clues for the future occupational therapy intervention and care of advanced AD patients.

Key words: Advanced Alzheimer Disease, Non-pharmacological intervention, Occupational Therapy, Salivary amylase activity, Touch and massage care

Introduction

Alzheimer disease (AD) is the most common of irreversible progressive neurocognitive conditions, wherein memory and thinking faculties gradually deteriorate. In the advanced stages of the disease, communication abilities are lost, and the patient is expressionless, cannot make utterances or move independently, and, in many cases, is bedridden. As a method of care for advanced AD patients, non-pharmacological interventions have been recommended (1). Various non-pharmacological interventions have been proposed for elderly persons suffering from dementia such as AD, including sensory stimulation interventions such as acupuncture, aromatherapy, touch and massage therapy, and light therapy; cognitive/emotion-oriented interventions such as music therapy, dance therapy, Snoezelen, and reminiscence therapy; and other interventions such as behavior management techniques, therapeutic exercise, and animal-assisted therapy, and positive effects of these interventions on behavioral and psychological symptoms of dementia (BPSD) have been reported (2). Furthermore, most prior studies on touch and massage care have used changes in behavioral and psychological symptoms as outcomes to evaluate the intervention benefits (3). Amano et al. conducted a study with students in their 20s receiving touch and massage care (Tactile Care®), and found a significant improvement in both subjective assessments; Profile of Mood States (POMS), and Relaxation evaluation scale, and objective assessments; Low frequency and high frequency heart rate ratios (LF/HF), and Salivary secreted immunoglobulin A (4). Touch and massage care has been shown to reduce the stress and anxiety of hospitalized patients (5) and to be effective in relieving BPSD (6); similar effects on mental and physical stress reduction are anticipated for elderly persons suffering from dementia.

Most AD patients in previous studies on touch and massage therapy were mild or moderate cases, and most previous studies have relied exclusively on self-report measures (7); thus, there are almost no studies with advanced AD patients for whom communication has become problematic. Since advanced AD patients show little change in facial expression and have difficulties with verbal communication, it is challenging to assess whether a given type of rehabilitation or care is experienced as pleasurable by the patient.

Therefore, this study used an objective indicator, salivary amylase (α -amylase), as an outcome measure to assess the effectiveness of touch and massage care on advanced AD patients. We believe that this could help to increase the possibilities of providing more effective care for patients with communication difficulties.

Case presentation

Case Description

The patient in this case report was a woman in her late 80s who had been diagnosed with AD 9 years previously. The scores of the New Clinical Scale for Rating of Activities of Daily Living of the Elderly (N-ADL), the New Clinical Scale for Rating of Mental States of the Elderly (NM Scale) and the Assessment of Communication and Interaction Skill (ACIS) were 5 (Range: 0-50), 2 (Range: 0-50), and 21 (Range: 20-80), respectively. The patient was at care level 5, the most severe level of care need which is defined by Japanese Ministry of Health, Labour, and Welfare, in the long-term care insurance ranking (8) while her independence degree of daily living for the demented elderly was IV, the most severe level of dementia in the long-term care insurance ranking; she was able to swallow what was placed in her mouth, but required assistance for all other activities. At times, when her body was touched by staff while she was being moved, she would stiffen her muscles and flex her arms and legs intermittently, showing a pained expression on her face. When staff spoke to her, she rarely responded with eye contact; although she occasionally made utterances, communication (understanding and expression) was difficult for her.

The study was conducted according to the principles of the Helsinki Declaration and approved by the Ethics Board of the Department of Control Science for Body and Life Function at the Hiroshima University Graduate School of Biomedical and Health Sciences (approval number: 1505). Given the difficulties in obtaining the patient's consent for the study, the outline and objectives of the study were explained to her husband verbally and in writing, and his written consent was subsequently obtained.

Methods

The salivary amylase activity was measured just before and immediately after the touch and massage care intervention every time. Salivary amylase is secreted both through the direct action of the sympathetic nervous system and through the effects of noradrenaline. Since salivary amylase activity increases with unpleasant stimuli and decreases with pleasant stimuli, it can be used as a measure to determine whether a person experiences a stimulus as pleasant or unpleasant (9). In this study, a special chip was placed under the patient's tongue for 30 seconds to take a salivary sample, and the level of salivary amylase was then measured using a salivary amylase monitor (NIPRO, Osaka, Japan).

Once a month during 5 months, unscented jojoba oil was applied to the patient's hands while she was seated on a wheelchair with her hands on a table, and she received 10 minutes of touch and massage care on each hand, for a total of 20 minutes. The treatment was provided by an experienced occupational therapist who had received training in touch and massage care. The Wilcoxon signed-rank test was used to compare salivary amylase levels

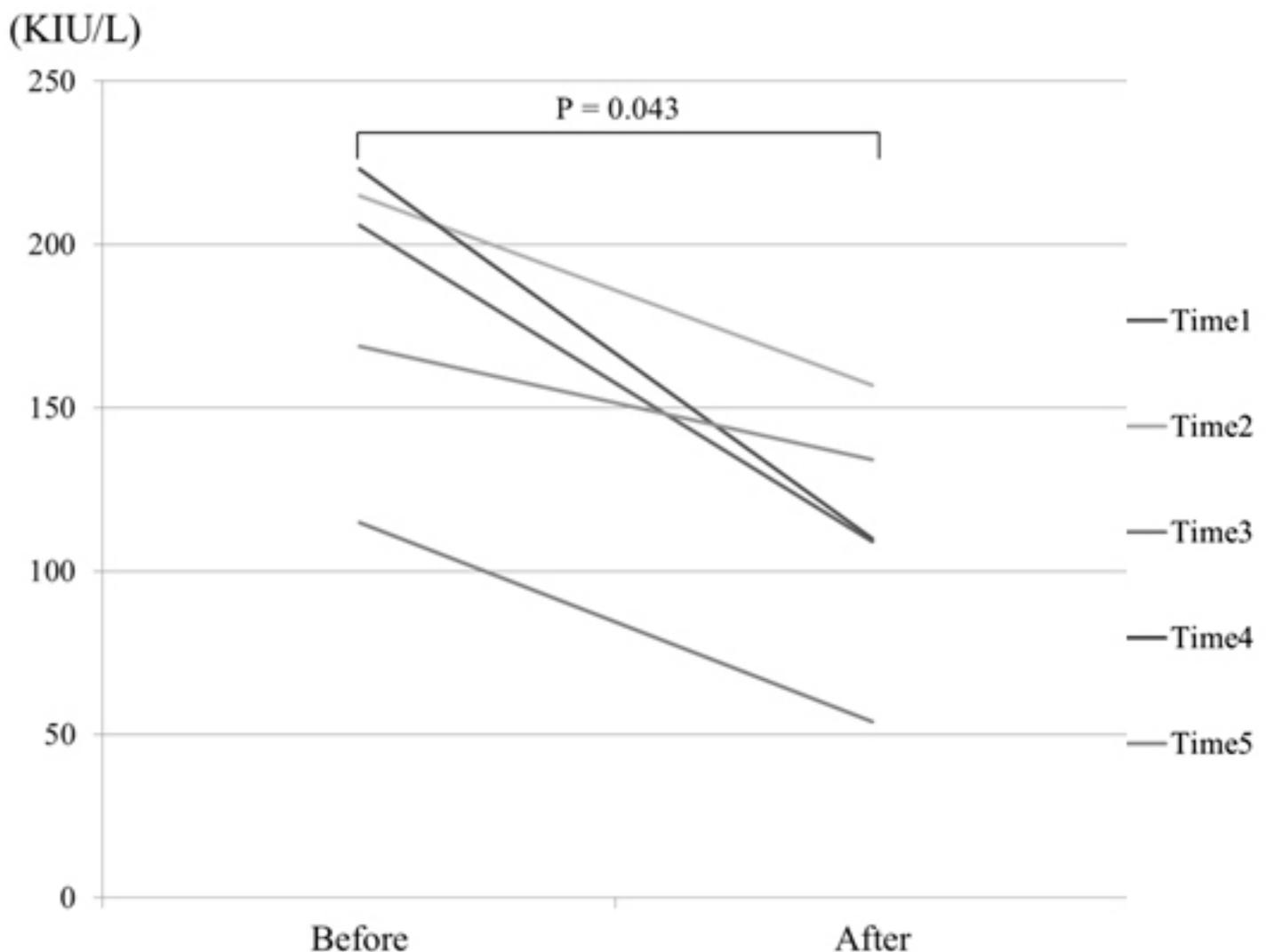
before and after the touch and massage treatment. Statistical analyses were performed using the IBM SPSS 21.0 Statistics (IBM Japan, Tokyo, Japan), with a significance level of 0.05.

Results

Figure 1 shows the change of salivary amylase values between before and after touch and massage care. The average salivary amylase values before and after the 5 times that the patient received the touch and massage treatment were 185.6 KIU/L (SD = 44.5) and 112.8 KIU/L (SD = 38.3), respectively. A significant decrease in salivary amylase activity was observed ($P = 0.043$).

As for the patient's appearance during the sessions, when she was helped to move her arms onto the tabletop, her arms and legs sometimes stiffened, and she flexed them intermittently, however, the stiffening diminished after the massage began. Additionally, when the OTR asked the patient questions such as "Does it feel good?" she sometimes nodded or responded "Yes, good." When she was given assistance that involved moving her body, she sometimes had a pained facial expression; however, during the massage treatment, she most commonly had a relaxed expression.

Figure 1: The change of salivary amylase values



Discussion

A previous study reported that touch and massage have usually been used as one of the occupational therapy intervention methods for terminally ill patients who have difficulty with active motion or have the need for relaxation or release from pain(10). Although there are some reports that hand massage intervention has beneficial effects to decrease salivary cortisol and alpha amylase as indicator of stress,(11) research on the effectiveness and the use of touch and massage care has not been done sufficiently. In this study, touch and massage care was provided to an advanced AD patient with communication difficulties, and the effects were assessed comparing salivary amylase activity before and after the intervention. Since the level of salivary amylase, which is believed to indicate physical and emotional stress, decreased immediately after the touch and massage treatment, we can infer that the treatment provided to the advanced AD patient in this study had a significant effect in reducing stress. However, in previous studies conducted with older people in long-term care facilities without dementia, we found that while the salivary amylase value decreased immediately after the intervention, 10 minutes after the intervention, the salivary amylase values returned to levels observed before the intervention. Therefore, further research is required to understand how to maintain these effects.

In this particular case, the staff had almost no one-on-one interaction with the patient other than practical care such as help with eating, dressing, and moving, and the question of how they should best interact with the patient was a matter of concern for them. Seeing the patient's changes in facial expression when receiving the touch and massage treatment and observing her interactions with the OTR encouraged the staff to make positive changes in their own interactions with this and other patients.

Since this was a pilot case study with a single patient, the results cannot be generalized. However, the study showed that touch and massage care could provide pleasant stimulation for an advanced AD patient with verbal communication difficulties and offered the possibility of reducing physical and emotional stress; therefore, it provides important clues for the future occupational therapy intervention and care of advanced AD patients. It has also been reported that massage is commonly used by OTRs with terminal-stage cancer patients. Therefore, massage may be effective not only in the rehabilitation of advanced AD patients, but also in palliative care for terminal patients. Therefore, as well as increasing the number of study patients, differences between them should also be considered in future research.

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