Positioning intervention effect to eliminate muscle tension in patients with contracture

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Introduction

Patients in A ward, a neuromuscular incursion ward, require tracheostomy and a ventilator as the condition progresses. Because they cannot move their bodies by themselves, posture transformation / positioning is necessary. Actually, 38 of the 48 patients in the hospital A ward are contracted in one of the bodies. We have been carrying out positioning prevention for the prevention of skin problems and pressure elimination by compression of the same site. To practice positioning aimed at reducing muscle tension is necessary for patients with contractures to maintain a comfortable posture and to prevent the progress of contractures.

Subjects and Methods

The subject was a patient with progressive supranuclear palsy, tracheotomy and with a gastrostomy. ADL was full-scale assistance. The neck was bent back, the right elbow joint and the bilateral joint flexed, and the left elbow joint extended and contracted. The lower body was tilted to the right with the pelvis as the border.

Intervention

1. A picture was taken of the positioning in the bed, the lying posture (supine position, both lateral decubitus positions) before improvement.
2. A nurse measured the joint movement range, body temperature, pulse rate, blood pressure, SpO 2 after 5 minutes, 10 minutes, 15 minutes, 30 minutes, and 1 hour at the position of the left lateral decubitus before the positioning intervention. Measurements were carried out once a day for one week. The measurement site of the range of motion of the joint was the neck (Figure 1) elbow (Figure 2) knee (Figure 3).
3. The researcher reviewed the subject's positioning and received advice from a physical therapist.
4. The positioning required to reduce muscle tone was determined. Pictures were taken of the lying posture (supine position, both lateral decubitus position) after the intervention.
5. The positioning method was used by all nursing staff.
6. The picture after the intervention was placed on the bedside of the patient, and the nurses always referred to it at the time of posture change.
7. The nurse measured the joint movement range, body temperature, pulse rate, blood pressure, SpO2 after 5 minutes, 10 minutes, 15 minutes, 30 minutes, and 1 hour after intervention. Measurements were carried out once a day for one week.

Evaluation method

We calculated the average value of each

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item (range of joint movement, body temperature, pulse, blood pressure, SpO2) before and after the intervention for one week.

Ethical consideration

The research was approved by the ethics committee of A hospital in FY2008. The patient's privacy was considered. When the researchers present the findings in academic meetings or dissertations, personal names will be symbolized and not identified. The benefits and disadvantages will be explained to the subjects and their families. After gaining an understanding of the above, the consent of the subject and family was obtained.

Results

Changes before and after the intervention of the average range of movement of the neck are shown in Table 1. The average range of motion improved after 5 minutes and after 1 hour. Similarly, the average range of motion improved after the intervention in the right elbow, right knee and left knee (Tables 2-4). Body temperature decreased by 0.2 ° C after 5 minutes of intervention (Figure 4). It decreased by 0.2 ° C 1 hour after intervention (Figure 2). The pulse rate decreased by half 5 minutes after the intervention. It decreased by 8.1 times / min 1 hour after the intervention (Figure 3). SpO2 increased by 2.1% 5 minutes after the intervention. It increased by 1.5% after 1 hour (Figure 4). Mean blood pressure decreased by 10 mmHg after 5 minutes of intervention. It decreased by 5 mm Hg after 1 hour (Figure 5).

Discussion

In the patient, the cervix was retroflexed, and the right elbow joint and the bilateral joint were bent. The left elbow joint was stretched and contracted. The lower half of the body was right-rotated. In the positioning intervention, the neck extended after improvement. It was thought that stretching was observed because a rolled towel could be inserted behind the neck. We placed a cushion under the right elbow. As a result, the angle extended from 0.8 ° to 4.7 °. The range of joint motion of both knees was improved by putting a cushion under the knee and stabilizing the knees in an upright position. Moreover, by stabilizing the knee, it is thought that the twist of the body axis was resolved and this led to a comfortable posture. Body temperature decreased 0.1 - 0.2 ° C after the intervention. Pulse decreased by 5.2 to 8.1 / min. SpO2 increased by 1.5% to 2%. The average blood pressure decreased by 5 mmHg to 10 mmHg. The increase in SpO2 is thought to be due to the elimination of compression of the rib cage by the right upper limb and improvement of thoracic movement. Improvement in positioning is thought to have led to a decrease in muscle tone. However, body temperature did not change clearly, and there was no effect from improving the positioning.

Patients with neurological and muscle intractable diseases often suffer from long-term bed linings as the disease progresses. For this reason, practicing positioning for the purpose of lowering muscle tone is necessary for prevention of contractures for long-term rescued patients. Because there was only one subject patient this time, there is a limit to the applicability of this research. We intend to

practice for many patients who can not appeal similar interventions.

Table 1. Joint movement range (mean) of the neck before and after the intervention

	5 m	1h	
Before	10.9°	9°	
After	7.7°	7.6°	

Table 2. Joint movement range (mean) of the right elbow before and after the intervention

	5 m	1h
Before	81.7°	85.9°
After	80.9°	81.1°

Table 3. Joint movement range (mean) of the right knee before and after the intervention

	5 m	1h
Before	39.3°	44°
After	47.1°	46.4°

Table 4. Joint movement range (mean) of the left knee before and after the intervention

	5 m	1h
Before	65.6°	69.1°
After	76.1°	76.8°

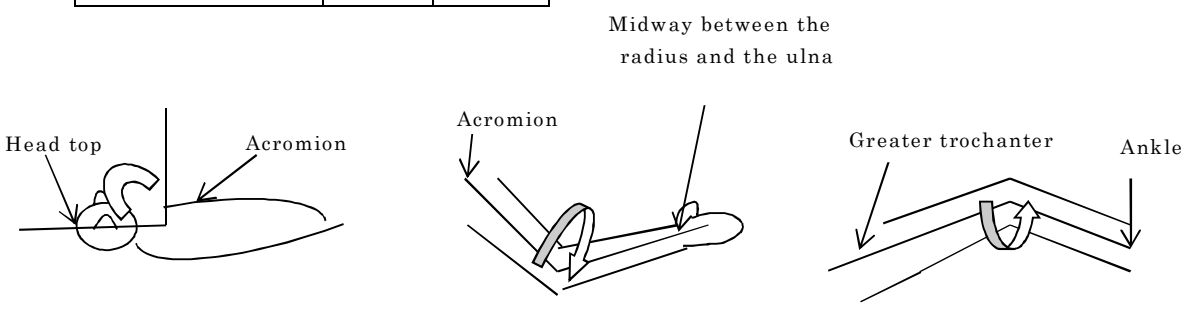

Figure 1. Measurement site of neck, elbow and knee

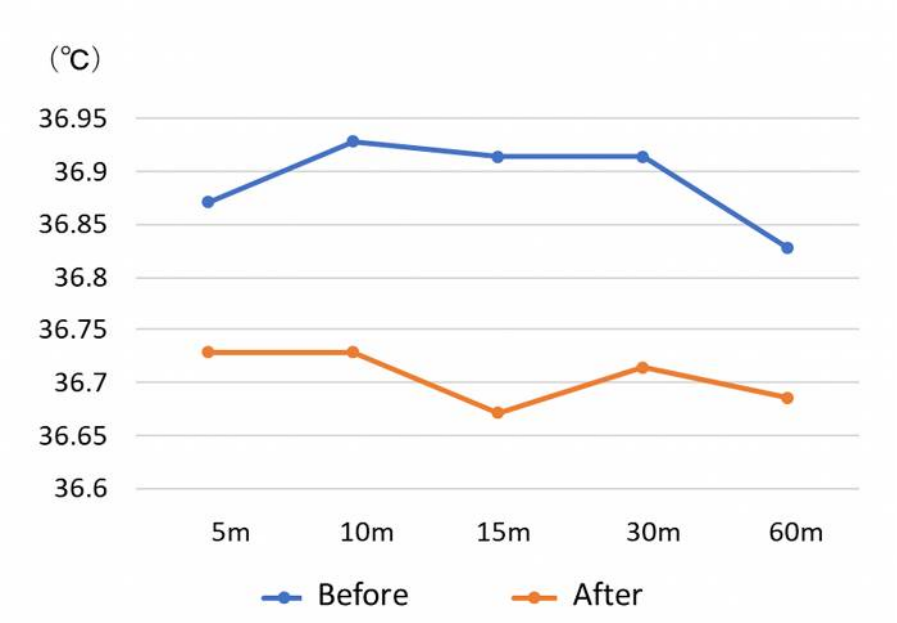

Figure 2. Body temperature (mean) before and after the intervention

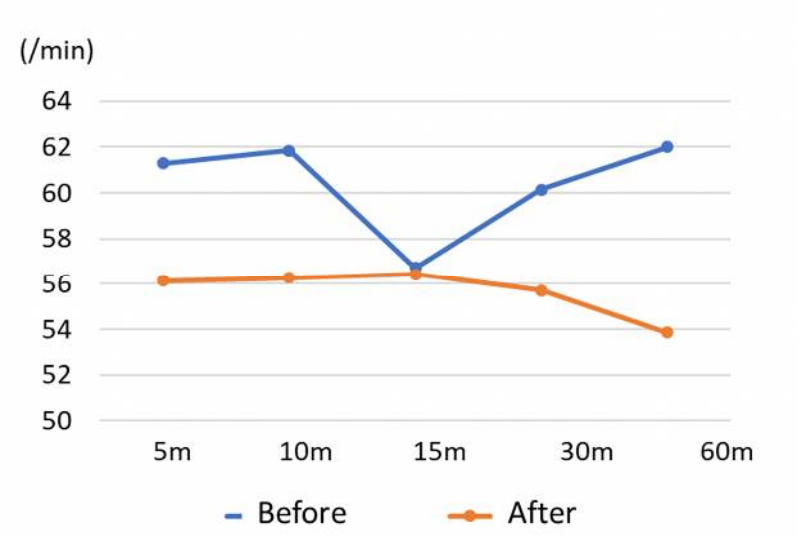

Figure 3. Heart rate (mean) before and after the intervention

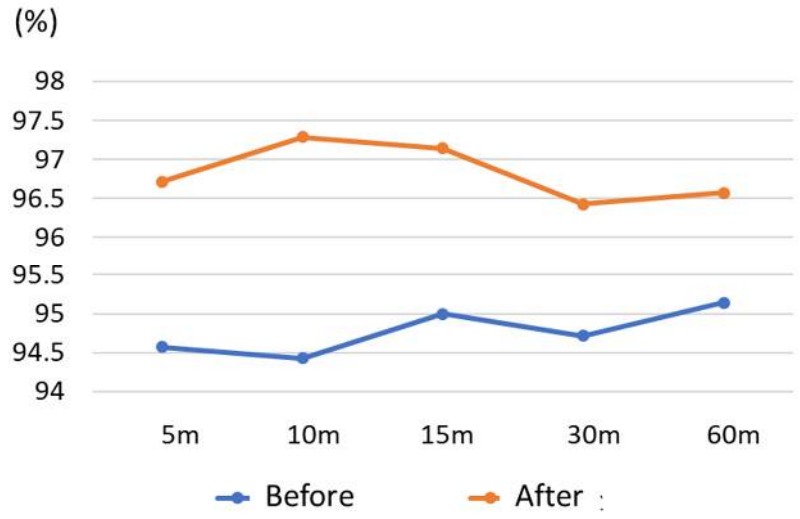

Figure 4. SpO_2 (mean) before and after the intervention

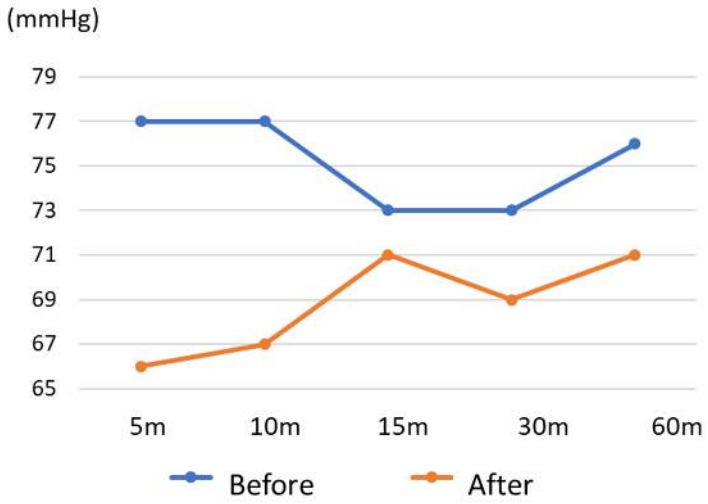

Figure 5. Blood pressure (mean) before and after the intervention