Sheila[1] reported the influence of the supine position, the sitting position, and the sidelying position for CP of GMFCS V level with an intervention time of 20 min. The results showed that the use of therapeutic positioning in sitting and sidelying positions should be considered as a noninvasive intervention for a population with respiratory compromise.

Taking these results into consideration, even for a short period of intervention time compared with the ARDS case, it is estimated that the redistribution of the expansion gradient from the dorsal side to the ventral side leads to improvement of oxygen supply.

No adverse events were observed in this study during the intervention period. We followed the technique of Langer et al., who manually changed the position using four staff members as a postural change of prone position for ARDS patients. Attention was paid to avoid eye damage and unphysiologic movement of the extremities during the posture changes. In that way, no adverse events related to the prone position were observed during the intervention period[14]. Guerin et al. showed all institution that studied the effect of prone position on severe ARDS patients were skilled in the process of turning patients from the supine to the prone position, as shown by the absence of adverse events directly related to repositioning[12].

Factors considered to have led to the safety of this research were the implementation by 3 to 4 members of the care staff who were familiar with the physical condition of the subjects, consideration for the tracheostomy, monitoring in proximity to the subject, and use of a device for holding the prone position according to the subject's body shape.

In this case, pneumonia and fever were not observed during the intervention period. It was speculated that the natural discharge of respiratory tract secretions in the prone position could have influenced the prevention of aspiration.

In relation to the physical activity and the healthy life span of CP patients, sedentary behavior (SB) is known to have an adverse effect on health[15][16]. The metabolic equivalent of a task (MET) used in this table is a physiological measure expressing the energy cost of physical activities and is defined as the ratio of the metabolic rate during a specific physical activity to a reference metabolic rate (1 MET), set by convention at 3.5 mL O_2/kg/min. A recently published standardized definition of SB is any waking behavior characterized by an energy expenditure of 1.5 METs in muscular inactivity while in a sitting or reclining posture[17].

Therefore, strategies to increase physical activity levels in children and adolescents with CP are considered important for long-term health[18]. For patients with severe motor disabilities, such as the subjects in this study, who found it difficult to change posture, opportunities for attitude change are considered important exercise opportunities. Therefore, implementation of various posture variations is an important consideration for health life extension.

Although the relationship between postural change and life extension was not clarified because the long-term prognosis was not considered, due to the safety of implementation of prone position therapy, it is desirable to contribute to the prolongation of healthy life in the future.

From the results of this study, prone positioning for quadriplegic patients who present severe motor disabilities due to cerebral disease can be expected to have a certain effect even for short-term intervention, so it is possible to consider safe intervention according to the subjects.

A limitation of this study was that only ten cases were evaluated. Although it was possible to show that effective changes occurred using this method, it is necessary to carry out long-term intervention in the future and verify it including its effects.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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