

Effect of mouth care on patients with muscular dystrophy during use of full-face helmet mask

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Abstract

For two patients with muscular dystrophy using a full-face helmet mask for the respirator, we provided brushing using a gel for mouth care, and salivary gland massage. The intraoral dirt and drying of the patients were reduced, and the intraoral environment was improved. In this study, we were not able to determine the quantity of saliva and halitosis, or the intraoral state including the intra-oral bacterial count with numerical values exactly. A problem was the small number of cases.

Introduction

Muscular dystrophy is a disease in which muscle gradually withers while repeating denaturation and the reproduction of muscle cells. Therefore, their ADL decreases and there are many patients who cannot conduct mouth care by themselves. Also, mastication disorders, dysphagia and trismus are complicated. Therefore, the procedure for conducting mouth care of patients with muscular dystrophy is difficult. In patients with muscular dystrophy using nasal tube feeding and a full-face helmet mask for the respirator, bacteria can easily propagate in the oral cavity that self-purification with the saliva decreases and does it. We carry out mouth care of the patients by liquid tooth brushing once a day in the ward. Because the oral cavity cannot be flushed with water by the current method, attachment and dried dirt are seen in the oral cavity. Yokobayasi et al. reported, "the moisturizing gel brushing was hard to save drying and cleaner than conventional mouth care"[1]. This method may be more effective than conventional mouth care with patients for whom aspiration is easy.

Haruyama et al. reported: "It is important for intraoral cleaning that we control the quantity of intraoral bacteria. Promotion of salivary secretion is necessary".[2] Therefore,

a combination of saliva massage and brushing using the gel for the mouth care may help with improving drying and with reduction of intraoral dirt. We examined the effects in this study.

Subjects and method

The subjects were two patients that used a full-face helmet mask as a respirator. The study period was August 28, 2015 until March 31, 2017.

Patient 1: The patient was a female in her 50s with myotonic dystrophy. We attached a respirator with a full-face helmet mask for from 16:00 p.m. to 9:00 a.m. There are a lot of teeth to remain in.

Patient 2: The patient was a male in his 60s with myotonic dystrophy. We attached a respirator with a full-face helmet mask all day. However, secession of respirator was possible for one hour in the morning and the afternoon. There are not the teeth to remain in. Intervention method:

1) A dentist advised on the method of mouth care.

We brushed the teeth using the corner of the toothbrush for Patient 1. We changed the head of the toothbrush to a small one. For Patient 2, the point of a brush of the toothbrush was changed to a soft type.

2) For the unification of the procedure, we made a brochure of the method. We conducted a study session.

3) Enforcement: We conducted mouth care using gel once a day. We applied gel during the mouth care in the oral cavity and removed intraoral accretions by using a toothbrush and a gauze bed bath. After brushing, a gauze bed bath was performed in the oral cavity. We did this while lengthening gel for the mouth care thinly. We provided salivary gland massage (of the parotid gland, submandibular gland, sublingual gland) for ten times, once a day.

Evaluation method:

1) We evaluated the intraoral state using an intraoral assessment sheet (Eilers oral cavity assessment guide list) before mouth care and salivary gland massage treatment every Friday.

2) On the fourth Friday of each month, we took an intraoral photograph.

Ethical considerations. We explained the purpose of the study using a document for a family with study patients ; 1) In consideration of the privacy of the patients, individuals would not be identified. 2) Participation in the study was voluntary and patients could withdraw at any time. 3) We would not use the data obtained for any purpose apart from that of this study.

Results

Patient 1 did not show any changes regarding the voice, deglutition, mucosa, gingiva, teeth, dentures. For the labial item, the score worsened to 2 on the 84th day, but the score improved to 1 on the 91st day. For the lingual item, the score improved to 1 from day 14, but worsened to 2 from day 84. For the salivary item, the score worsened to 3 on the 91st day (Figure 1A). Because SpO₂ 80% fell to a stand and much sputum often adhered to the full-face helmet mask for the respirator in the daytime from the 81st day. We often put on the full-face helmet mask for the respirator in the daytime. Saliva increased by salivary gland massage and could be aspirated.

Patient 2 did not show any changes regarding the voice, deglutition, teeth, or dentures.

For the labial item, a score worsened to 2 on the 14th day, and improved to 1 on the 28th day. The score worsened to 2 again on the 56th day, and improved to 1 on the 70th day.

For the lingual item, the score improved to 1 on the 14th day, but worsened to 2 on the 56th day. For the saliva, the mucosal item, the score worsened to 3 on the 56th day, and improved to 2 on the 70th day. For the gingival item, the score improved to 1 on the 42nd day, but worsened to 2 on the 56th day, and the score improved to 1 on the 70th day (Figure 1B). Septic shock due to urinary tract infection occurred on the 54th day.

Discussion

Kishimoto reported: "The main purpose of conducting mouth care is the removal of dental plaque. Bacteria do not decrease after mouth care that leaves dental plaque. These bacteria invade blood vessels and adversely affect overall status by causing inflammation". The limitation of this study was that brushing using the gel for the mouth care and salivary gland massage was not continued and the unification of the procedure was insufficient. The combination of brushing and salivary gland massage using gel for the mouth care helped reduce the intraoral pollution of patients with muscular dystrophy that used a full-face helmet mask for the respirator, and reduction of the drying. There was not the continuity of the quantity of saliva increase with the salivary gland massage, but the oral cavity was cleared by saliva flowing temporarily. In this study, we were not able to determine the quantity of saliva and halitosis, or the intraoral state including the intraoral bacterial count with numerical values exactly. A problem was the small number of cases.

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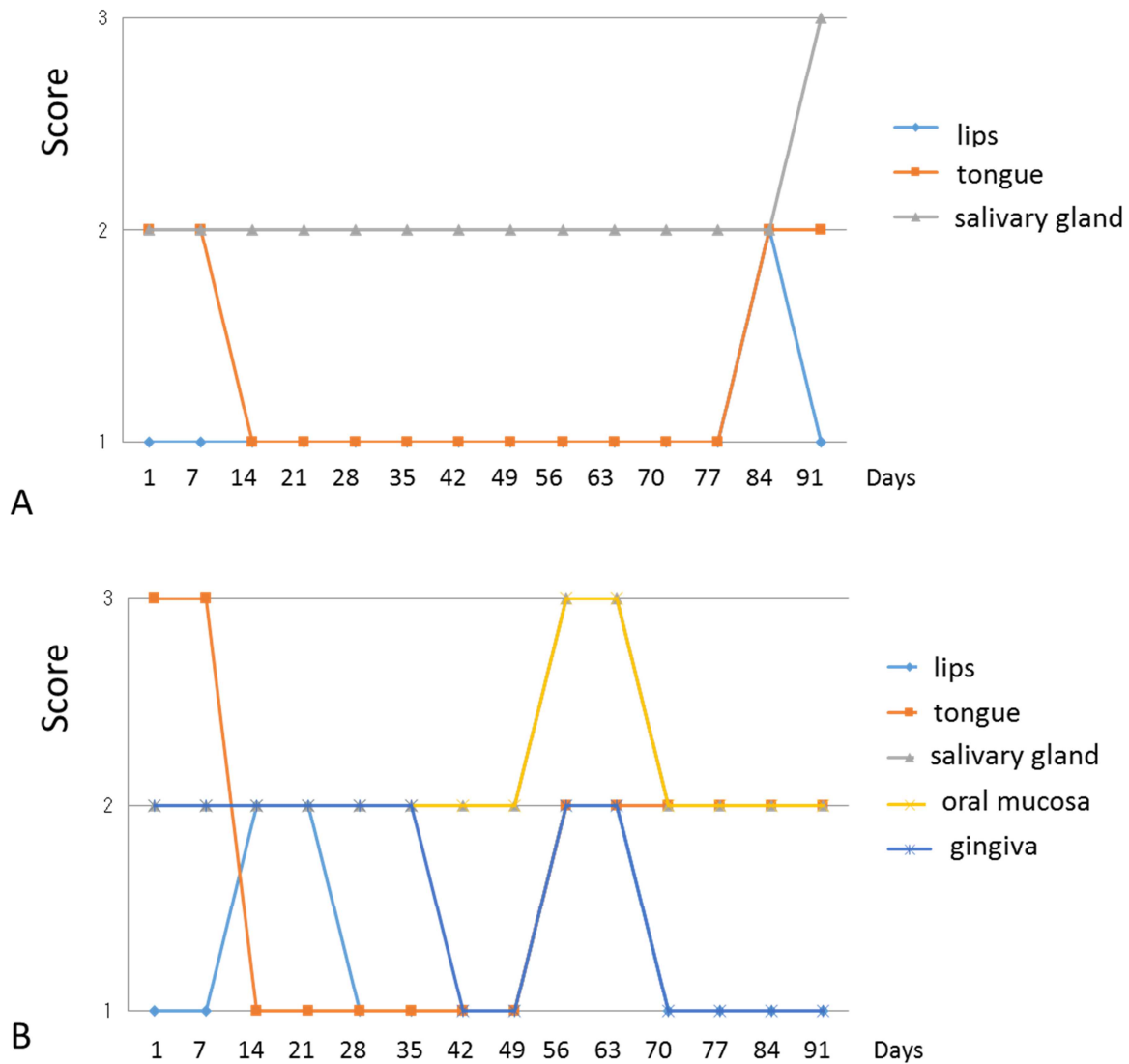


Figure 1. Changes of Eilers oral cavity assessment score of patient 1 (A) and Patient (2) before and after intervention.