論 文 要 旨

Impact of a 7-day field training on oral health condition in Japan Ground Self-Defense Force personnel

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Introduction

In the Japan Ground Self-Defense Force (JGSDF), personnel periodically perform intensive training that mimics the conditions seen in battle and during natural disasters. Military training involves intensive, stressful conditions, and changes in immune responses have been found in personnel following training. Good oral condition is important for military personnel to fulfill their duties; however, they have difficulty performing daily oral care under training conditions. In this study, we investigated the impact of a 7-day field training on the oral health status of JGSDF personnel by comparing their oral condition before and just after training.

Materials and Methods

The participants were 59 male and 3 female JGSDF personnel undergoing a 7-day field training. All personnel provided informed written consent to participate, and this study was approved by the ethics committee of the Kagoshima University Graduate School of Medical and Dental Sciences. Oral health behaviors before and during the training period were surveyed using a self-administered questionnaire. Dental caries was assessed before training in terms of decayed, missing and filled teeth (DMFT), and periodontal condition was examined before and immediately after training using the community periodontal index (CPI). The presence of eight species of bacteria in dental plaque, including commensal streptococci that are early colonizers on the tooth surface, cariogenic bacteria, and periodontopathic bacteria, was determined using real-time polymerase chain reaction. We also assessed antibacterial factors and a stress marker in saliva samples. Sample collection was performed before and just after training. In addition to difference analysis between groups, logistic regression analysis was performed to examine the association between each health behavior and periodontal deterioration.

Results

The frequency of tooth brushing decreased, and snacking increased during the training period. Thirty-five personnel (56.5%) showed an increase in individual CPI code (Table II), and 57 personnel (91.9%) showed deterioration in the CPI code in one or more sextants after training (Figure 1). Tooth brushing frequency was significantly associated with CPI deterioration; the odds ratio in subjects who did not brush their teeth was 7.51 compared to those who brushed at least once during the training period. Severe periodontal deterioration was observed in the high-DMFT group (Figure 2), and tooth brushing frequency during the training period decreased more in this group compared to the low-DMFT group (Table IV). The percentages of

Streptococcus sanguinis and *Streptococcus gordonii* increased significantly after the training period suggesting dental plaque maturation (Table V), and an increase in *S. sanguinis* was associated with tooth brushing frequency. The lactoferrin concentration in saliva increased significantly after training.

Conclusions

We demonstrated periodontal deterioration in JGSDF personnel after a 7-day training. Behavioral changes, especially discontinuation of regular tooth brushing, fostered dental plaque maturation, resulting in inflammatory changes in participants' periodontal condition. The results indicate the importance of performing tooth brushing at least once over a 7-day training period for prevention of periodontal deterioration. The regimen could be applicable to evacuees from disasters because they are under conditions of stress that may limit oral hygiene activity.