Abstract

Objectives: The aims of this study were to investigate the sensitivity and specificity of toluidine blue and/or vinegar in oral cancer screening and to investigate the association between clinical screening using toluidine blue and vinegar and the expression of the tumor marker p53 and proliferation marker Ki67, respectively. Materials and methods: The study consisted of 87 participants suspected of having oral squamous cell carcinoma. Toluidine blue and/or vinegar were applied to the lesions, followed by incisional biopsies. The specimens were then microscopically examined for pathological diagnosis and underwent immunohistochemical investigation for p53 or Ki67. Results: The results revealed that the sensitivity and specificity of oral cancer screening using toluidine blue were 93% and 46%, respectively; whereas the sensitivity and specificity using vinegar were 85% and 81%, respectively. A statistically significant correlation between vinegar positive lesions and the expression of Ki67 ($p=0.019$) was observed. Although there was a difference in the expression of p53 between specimens that were positive and negative to toluidine blue, the correlation did not reach a significant level. Conclusions: Based on the results from this study, vinegar has a lower sensitivity than toluidine blue but a higher specificity in oral cancer screening. The results of the clinical screening using vinegar correlated with the expression of Ki67 at the cellular level. Clinical relevance: This study supports the use of toluidine blue and 5% acetic acid in oral cancer screening. Ki67antibody reaction can also be used for oral cancer treatment planning and prognosis determination.

Keywords Oral squamous cell carcinoma; oral cancer; toluidine blue; acetic acid