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Correlation between angiogenesis and reduction ratio measured using ^{201}Tl chloride single photon emission computed tomography in patients with oral cavity squamous cell carcinoma

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Objective: The aim of this study is to examine the correlation between tumor angiogenesis and response to preoperative radiotherapy evaluated using ^{201}Tl single photon emission computed tomography (Tl SPECT) in oral cavity squamous cell carcinoma (SCC). ***Methods:*** Tl SPECTs before and after preoperative radiotherapy were obtained from 11 patients diagnosed with SCC in oral cavity. Regions of interest were set around the tumor and scalp respectively, and the ratio of mean counts in the tumor to those in the scalp was calculated (T/N). Immunohistochemical staining for investigating microvessel density of pre-treatment biopsy specimen was performed using CD31 monoclonal antibody. We compared microvessel density with semi-quantitative parameters obtained using Tl SPECT (T/N at pre- an post-treatment, reduction ratio) and prognosis. ***Results:*** The subgroup with higher microvessel density showed a significantly higher reduction ratio than the one with lower microvessel density. Regarding prognosis, the subgroup with locoregional recurrent disease exhibited a significantly higher microvessel density than the one without recurrence. ***Conclusions:*** In SCC of the oral cavity, there was a significant correlation between microvessel density and response to preoperative radiotherapy. Namely, it was revealed that change of ^{201}Tl uptake after preoperative radiotherapy correlated with tumor angiogenesis of oral cavity SCC.

Key words: microvessel density, preoperative radiotherapy, oral cavity squamous cell carcinoma, ^{201}Tl chloride single photon emission tomography, CD31