

Preoperative Estimation of Prognosis of the Patient with Tongue Cancer using Tumor Depth and Margin Shape Obtained from Ultrasonography

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using Tumor Depth and Margin shape Obtained from Ultrasonography
(超音波画像を用いた舌癌の形態分析による術前予後診断に関する研究)

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論 文 内 容 の 要 旨

Preoperative ultrasonography (US) assessment is useful to predict prognosis for tongue cancer noninvasively. In recent years, the concept of tumor-host borderline interaction has been focused in cancer researches. The study purposed to evaluate tumor depth (TD) and margin shape (MS) of tongue cancer using US to predict patient prognosis using these two parameters and to demonstrate relationship between parameters obtained from US and histopathological malignancy grades of tongue cancer.

Fifty-two cases of oral tongue cancer patients who underwent ultrasound examination at Kyushu University Hospital during 2007-2012, were evaluated retrospectively. TD was measured at the deepest portion of the tumor. MS were classified into 3 types: "pressure", "wedge shaped", and "permeated". Prognosis was assessed as local recurrence, lymph node metastasis and overall survival. We classified cases into 2 groups, good prognosis group and poor prognosis group. Relationship between TD, MS, and patient prognosis was evaluated using Spearman rank correlation. Finally, regression formula to predict patient prognosis using TD and MS was derived. Histological specimen was reviewed by two oral surgeons. The malignancy grading of specimen was determined by the mode of invasion according to Yamamoto-Kohama classification. Histological grades of malignancy (YK classification) and parameters obtained by US (TD, MS, and D) were analyzed using Spearman's rank correlation.

Correlation between TD and MS was significant (Spearman's rank correlation was 0.552, $p < 0.01$). Using structure matrix, we identified contribution of both predictors from US image. Contribution of TD was 0.796 while that of MS was 0.906, which was better than TD. Prognosis could be predicted using regression formula: $D = -2.801 + 0.093X + 0.872Y$, where D = prognosis (risk probability), X = tumor depth (mm), Y = margin shape (grade). Average value for good prognosis was -0.254 with standard deviation 0.962, while that for poor prognosis was 0.566 with standard deviation 1.08 ($p < 0.05$). The cut-off value for classifying cases was -0.00169 . Using the formula above, 73.1% of the poor prognosis cases were correctly classified.

A significant correlation between YK classification and D was also found. The Spearman's rank correlation coefficient was 0.407 ($p < 0.01$), which was higher than those between TD or MS and histopathological grading alone. Our results showed D values calculated from TD and MS were significantly correlated with histological grades of malignancy. The correlation coefficient was slightly higher than those of TD or MS alone. It implies we should use D values from US as a new parameter to predict patient prognosis with tongue cancer at the early stage of clinical examination.

MS can be one of the useful predictors of tongue cancer prognosis, together with TD. D value from US might be used as a new parameter to predict patient prognosis at the early stage of clinical examination.