Expressions of Angiopoietin 1 and 2 in recurrent oral cancer
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Abstract
This study aims to evaluate the clinical significance of Ang 1 and 2 in recurrent but operable squamous cell carcinoma of oral cavity (OCSCC). The formalin-fixed, paraffin-block tissues from 40 patients who underwent surgical intervention for local and local-regional recurrent OCSCC were retrieved for IHC study. The results showed that the actuarial 3-year disease-free survival rate was 43.1% and high expression of Ang 1 was correlated significantly with positive nodal stage (p = 0.041). Patients with higher recurrent tumor stage (p = 0.0036) or higher expression of Ang 2 (p = 0.045) had a poorer actuarial 3-year disease-free survival, respectively. However, Cox’s regression analysis showed that only the recurrent tumor stage (RT) was the independent prognostic factor for survival.

Introduction
The recurrence of squamous cell carcinoma of oral cavity (OCSCC) following surgical treatment is usually encountered with a frequency of 19-48%. Salvage treatment for recurrent OCSCC is a challenge with an overall salvage cure rate of 9% to 67%1-5. The success of salvage for a recurrent disease depends on the extent of the tumor and the health status of the patient at the time of recurrence. Tumors develop angiogenesis by secreting growth factors, such as platelet-derived growth factor, vascular endothelial growth factor (VEGF) and angiopoietin-1 (Ang-1), to stimulate endothelial migration and proliferation. Ang-2 is the antagonist to Ang-1 and inhibits Ang-1-mediated Tie2 phosphorylation. Significant Ang-1 and Ang-2 expressions in the tumor tissue may contribute to the progression of malignancy.

Methods and Materials
Between 1995 and 2005, the formalin-fixed, paraffin-embedded tissues from forty patients who underwent surgical intervention for local and local-regional recurrent OCSCC were retrieved for immunohistochemistry study. Fisher’s exact test was used to evaluate the correlation between the clinicopathological variables and the expressions of Ang1 and 2.

Scaling for the intensity of immunostaining with Ang-1 and Ang-2
A four-tier scaling system was used to grade the intensity of immunoreactivity for Ang-1 and Ang-2. The sections were examined under low-power-field (100x) with microscopy to evaluate the percentage of tumor cells positive for Ang-1 or Ang-2. The tumor with less than 1% positive tumor cells was graded as score 0, 1-25% as 1+, 26-50% as 2+, and over 50% as 3+. Both 0 and 1+ were defined as low expression and both 2+ and 3+ as high expression for Ang-1 or Ang-2 immunostaining. Survival analysis was based on Kaplan-Meier method. To determine the effect of distinct prognosis factors on survival, a multivariate analysis was performed according to the Cox’s regression model.

Conclusions
The recurrent OCSCC with a high expression of Ang-1 or Ang-2 in the tumor bed have a more aggressive tumor behavior. Furthermore, the expression of Angiopoietin-1 correlates with the nodal status in recurrent but operable OCSCC. However, the salvage outcome depends on the recurrent tumor stage.

Bibliography