

The study of invasion and proliferation status in oral squamous cell carcinoma

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1998 Fiscal Year Final Research Report Summary

The study of invasion and proliferation status in oral squamous cell carcinoma

Research Project

Project/Area Number

08457544

Research Category

Grant-in-Aid for Scientific Research (B)

Allocation Type

Single-year Grants

Section

一般

Research Field

Surgical dentistry

Research Institution

Kanazawa University

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Project Period (FY)

1996 – 1998

Keywords

DMBA induced tongue cancer / mode of invasion / architecture of tumor vessel / proliferating cell nuclear antigen / vasucular endothelial cell growth factor / vessel density / positive rate / oral squamous cell carcinoma

Research Abstract

The vascular architecture of DMBA (9, 10-dimethyl I, 2-benzanthracene) induced tongue carcinoma in the hamster was examined. Changes in tumor vessels and their significance during growth of invasive oral squamous cell carcinoma was observed. Tongue cancer was induced by abrading the right margin of the tongue of each hamster with an endodontic barbed broach and subsequently applying 1.0 % DMBA dissolved in acetone, three times a week, at the same site. After macroscopic detection of cancer and the signs of cachexia (weight loss, etc.), Indian-ink was infused into the ascending aorta of each animal under general anesthesia. Tissue was harvested from each animal and made into a transparent specimen, 100 μm in thickness, for examination of vascular architecture. The mode of cancer invasion was Grade I in 8 animals, Grade 2 in 8, Grade 3 in 23, and Grade 4C in 5. Macroscopic tumor growth mode was exophytic in 36 animals and endophytic in 8 animals. Each mode of cancer invasion was associated with characteristic vascular architecture. That is, low invasive cancers (Grade I and 2) showed dendriform vascularization and a marked increase in vessel density as they underwent exophytic growth. Grade 3 invasive cancers showed rings of blood vessels forming during the course of invasion by alveolar tumor foci. Diffusely invasive cancer (Grade 4C) showed destruction of existing blood vessels and a decrease in vessel density. As tumor invasion progressed; the vessel density decreased ($p < 0.05$). The vessel density was significantly lower in cases of exophytic cancer than in cases of endophytic cancer ($p < 0.01$). The PCNA (proliferating cell nuclear antigen) of cancer cells, which is an indicator of tumor proliferation potential, was more frequently positive as tumor invasion became more severe. That is, the PCNA positive rate in Grade I or 2 animals differed significantly from that in Grade 3 or 4C animals ($p < 0.05$). The PCNA positive rate decreased as vessel density increased ($p < 0.05$). Thus, the vessel density was not proportional to the tumor proliferation potential. The expression of vascular endothelial growth factor (VEGF) was seen more frequently as tumor invasion progressed ($p < 0.05$), but the expression of VEGF did not correlate with the vessel density. These results suggested that the changes of the tumor vessel were dependent on the mode of cancer invasion and proliferation.▲ Less

Research Products (13 results)

All Other

All Publications (13 results)

- [Publications] Moriyama, M.: "Immunohistochemical study of tumor angiogenesis in oral squamous cell carcinoma" Oral Oncol. 33(5). 369-374 (1997) ▼
- [Publications] Kakihara, K.: "A study of the angiogenesis of oral squamous cell carcinoma. (Proceeding of the 5th International Congress on Oral Cancer=ICOOC, London, UK): Editor; Varma, AK, Macmillan India Limited" Oral Oncol. 5. 431-434 (1997) ▼
- [Publications] Shuichi Kawashiri: "Occult metastasis of cancer cells in an orthotopic implanted oral cancer model-Replicate the occult metastasis. (Proceeding of the 5th International Congress on Oral Cancer=ICOOC, London, UK): Editor; Varma, AK, Macmillan India Limited" Oral Oncol. 5. 443-446 (1997) ▼
- [Publications] Nozaki, S.: "Immunohistochemical localization of a urokinase type-plasminogen activator system in squamous cell carcinoma of the oral cavity: Association with mode of invasion and lymph node metastasis" Oral Oncol. 34(1). 58-62 (1998) ▼
- [Publications] 熊谷茂宏: "ヒト口腔扁平上皮癌組織における膜型マトリックスメタロプロテアーゼの発現" 日本口腔腫瘍学会誌. 10(1). 9-15 (1998) ▼
- [Publications] 森山万紀子: "口腔扁平上皮癌における微小血管分布および Vascular Endothelial Growth Factor (VEGF) の発現について" 頭頸部腫瘍. 24(1). 12-17 (1998) ▼
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- [Publications] Kumagai, S.: "Expression of membrane type-matrix metalloproteinases in human oral squamous cell carcinomas." J Jpn Soc Oral Tumor. 10(1). 9-15 (1998) ▼

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