Expression and mechanisms of connective tissue growth factor (CCN2/CTGF) induction in osteolytic jaw invasion of human oral squamous cell carcinoma

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INTRODUCTION: Mandibular squamous cell carcinoma has been defined as the carcinoma found in the mandibular alveolar ridge, lower buccal sulcus, sublingual sulcus or mandibular retromolar trigone region. Lesions in these areas often involve destruction of the mandible. The prevalence of mandibular bone invasion has ranged from 12 to 56%. Mandibular destruction is recognized as one of the most important prognostic factors. The prognosis of such lesions is usually poor with nearly 70% recurrence at the primary site, ultimately resulting in death. However, the mechanisms by which oral squamous cell carcinoma grows in and destroys the bone are poorly understood. Connective tissue growth factor (CTGF/CCN2) is a member of the CCN (for CTGF, Cyr61, Nov) protein family, which is characterized by sequence homology and the conservation of 38 cysteine residues among its members. Previously, CCN2 was found to be critically involved in osteoclastogenesis in vitro.

METHODS: Patient data. The study population included 20 patients, 11 men and 9 women, with oral squamous cell carcinoma of the mandibular region.

Classification of bone destruction. The histological pattern was classified into one of two patterns, erosive or invasive pattern, on the basis of modified classifications of tumor spread in the mandible (2).

Quantification of CCN2 in tissue sections. The degree of primary antibody reactivity on individual tissue sections was scored semi-quantitatively.

RESULTS: Histological analysis. CCN2 was abundantly produced by the tumor cells that had invaded the bone matrix and CCN2 was also present in the osteoclasts at the destroyed bone/tumor cell interface.

DISCUSSION: CCN2 can be a diagnostic marker and potential target for the treatment of oral squamous cell carcinoma-induced destruction of the mandible. Further investigation on the molecular mechanisms of CCN2 responsible for mandibular destruction is crucial to our goal of finding an effective therapy for bone-destructive oral squamous cell carcinoma.

REFERENCES: