
Background. Animal models of oral carcinogenesis are critical for development of noninvasive optical imaging diagnostic tests.

Objective. The aim of this study was to describe the optical imaging data in a mouse model of tongue carcinogenesis and correlate them with histologic and molecular features.

Study design. Two inbred strains (CBA and C57BL/6) of mice were given 4NQO (100 μg/mL) in drinking water for 16-weeks. Mice were killed 8 and 18 weeks after initiation of 4NQO treatment, and their tongues were imaged and then used for histologic and molecular studies. The tongues were imaged after topical application of the following fluorescently tagged contrast agents: fluorescent deoxyglucose analog 2-NBDG (to assess metabolic activity), epidermal growth factor (EGF) peptide, and proflavine (DNA-binding dye). Tissue sections were stained with antimouse EGF receptor (EGFR), phosphorylated EGFR (p-EGFR), CD147, cyclin D1, and p63 antibodies.

Results. Autofluorescence imaging of experimental tongues revealed multifocal loss of autofluorescence, whereas control tongues revealed normal autofluorescence. Images obtained with contrast agents revealed higher fluorescence intensity in experimental tongues compared with control tongues. The experimental tongue mucosa revealed epithelial dysplasia at 8 weeks and oral squamous cell carcinoma at 18 weeks. Confocal imaging of fresh tissue slices incubated with 2-NBDG and EGF revealed increased binding in experimental compared with control tongues. Proflavine staining displayed dysplastic cells with enlarged nuclei throughout the entire epithelium. Immunohistochemistry revealed increased expression of EGFR, p-EGFR, CD147, cyclin D1, and p63 in the experimental tongue sections.

Conclusions. The 4NQO-induced mouse tongue carcinogenesis closely mimics the key optical imaging, histologic, and molecular features of human oral cancers and its precursors.

DISCOID LUPUS ERYTHEMATOSUS IN THE ORAL CAVITY: CLINICAL CHARACTERISTICS AND TREATMENT. E. Gagari, E. Georgakopoulos, T. Danciu. U Athens School of Medicine, Greece.

Discoid lupus erythematosus (DLE) is a chronic skin disease that mainly affects the skin of the face and other sun-exposed areas. It is distinctly rare in the oral cavity, and there are few evidence-based studies that document its treatment. We present a case series of 9 patients with oral DLE that have been followed for the past 2 years in the oral medicine clinic of the A. Syggros Hospital. The mean age of the patients was 52 years (range 40-75 years) and the majority (8/9) female. The oral lesions presented mainly as painful lichenoid mucositis with desquamative gingivitis and bullae formation being an occasional finding. Oral lesions responded initially well to treatment with oral prednisolone, but presented with frequent relapses. All of the patients demonstrated skin lesions characteristic of DLE and received different treatment for the skin lesions, which appeared to cause less discomfort to the patients. Serologic findings indicative of systemic lupus erythematosus were found to be negative in all of the cases examined.


Background. Twist1/2 are members of the bHLH family of transcription factors that are implicated in carcinogenesis and play essential roles during development. Despite their significant roles, the mechanisms that regulate the function of these factors remains poorly understood. We have identified 2 putative Akt phosphorylation sites in Twist1 that are conserved across species. Because both Akt and Twist1 are implicated in tumor initiation and progression, we tested expression and colocalization of Twist1 and active (phosphorylated) Akt (p-Akt) in samples of human oral squamous cell carcinoma (OSCC).

Study design. Twenty-five cases of paraffin-embedded tissues were selected from the oral and maxillofacial biopsy service at University of Michigan (UM) School of Dentistry. Immunohistochemistry was performed to localize Twist1 and p-Akt. reverse-transcription polymerase chain reaction was used to detect mRNA expression of Twist1 in OSCC cell lines isolated and characterized at UM; immunoblotting was used to detect p-Akt in these cells.

Results. In epithelium from normal patients, p-Akt and Twist1 staining was negative. In biopsy specimens of patients with OSCC, there was significant variability in Twist1 staining, ranging from <10% of the tumor cells being positive to >50%. There was a greater tendency for Twist1 positivity to be localized in the nucleus of poorly differentiated tumors. Similarly, there was variability in p-Akt staining and localization. All of the OSCC cell lines expressed p-Akt, whereas Twist1 levels were variable.

Conclusion. This preliminary work unveils a potential role for Twist1 in OSCC and its possible regulation by p-Akt in this malignancy. Future studies aimed at clarifying the role of Twist1 and Akt in the prognosis of patients with OSCC will be conducted in our laboratory.