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Features of oral squamous cell carcinoma in ex vivo fluorescence confocal microscopy

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ABSTRACT

Background: Real-time microscopic imaging of freshly excised oral squamous cell carcinomas (OSCCs) would be potentially supportive in rapid recognition of oral malignancy and an optimal and time-saving management of patients' surgical treatment. **Objectives:** The aim of this study was to examine oral squamous cell cancer tissue in regards to the commonly known and well-described histomorphologic criteria for the diagnosis of OSCC in ex vivo confocal fluorescent microscopy and to analyze its correlation with grade of differentiation and level of invasiveness. **Methods:** Ex vivo confocal laser scanning microscopy (CLSM) images of 38 OSCs cytological and architectural features based on the histopatCs were evaluated immediately after excision for presence or absence of variouhological background. Next, these features were compared to the grade of differentiation as elaborated via gold standard histologic examination. **Results:** Of 38 invasive OSCCs, 14 were well differentiated, while three moderately and 19 were poorly differentiated. The presence of the commonly known cytologic and histopathologic criteria for the diagnosis of oral squamous cell carcinoma such as the destruction of the basal cell membrane, cellular and nuclear pleomorphism, anisocytosis, intraepithelial keratinization, nuclear hyperchromasia, atypical mitotic figures as well as the presence of necrosis, and mixed inflammation could be observed in ex vivo fluorescence confocal microscopy (FCM). In ex vivo fluorescence confocal microscopy pictures, cellular pleomorphism and anisocytosis were observed more often in poorly differentiated OSCCs. Intraepithelial keratinization was associated with well differentiated and moderately differentiated OSCCs. **Conclusion:** The results demonstrate the high potential of ex vivo fluorescence confocal microscopy in fresh tissue for rapid real-time diagnosis of OSCC. © 2020 The Authors. *International Journal of Dermatology* published by Wiley Periodicals LLC on behalf of the International Society of Dermatology. PMID: 33368199 DOI: 10.1111/ijd.15152