Head & Neck Oncology

Oral presentation

Open Access

Qualitative diagnostics of oral mucosa by means of multiple fluorophore analysis

Miriam Havel[1], Romana Pauli[2], Andreas Leunig[1], Herbert Stepp[2] and Christian S Betz*[1]

Address: [1]Department of otorhinolarygology, University of Munich, Marchioninistr, Munich, Germany and [2]Laser Research Centre, University of Munich, Marchioninistr, Munich, Germany

* Corresponding author

from 1st Scientific Meeting of the Head and Neck Optical Diagnostics Society
London, UK. 14 March 2009

Published: 28 July 2009

Head & Neck Oncology 2009, **1**(Suppl 1):O17 doi:10.1186/1758-3284-1-S1-O17

This abstract is available from: http://www.headandneckoncology.org/content/1/S1/O17

Introduction

Early detection of oral cancer generally occurs by taking a biopsy. The measurement of specific autofluorescence of endogenous fluorophores represents a non invasive method to assess malignant tissue in terms of an "optical biopsy".

Materials and methods

We performed fluorescence measurements of oral mucosa tissue on 19 subjects with a clinical suspicion of a malignant lesion, as well as on 7 healthy controls. A mercury vapour lamp, equipped with appropriate filter sets, was used for the excitation and spectroscopic detection of endogenous fluorophores (NADH, FAD, tryptophan). Additionally, white light remission spectra were recorded from each site. This enabled the calculation of intrinsic fluorescence spectra. Spectroscopy results were then compared to histopathological findings of the subsequently excised lesions.

Results

Quantitative analysis indicated intrinsic fluorescence spectra of endogenous fluorophores from (pre)malignant mucosa to present significant intensity differences compared to healthy tissue. NADH and FAD in particular showed tumour specific fluorescence intensity profiles whereas for tryptophan, no distinct spectral differences were observed. Mucosa of healthy controls yielded similar spectral patterns as did macroscopically innocuous tissues of patients presenting with neoplasia.

Conclusion

The results of this study suggest that MFA, in conjunction with an adequate screening method (e.g. autofluorescence imaging), might be a suitable tool for the discrimination of early neoplastic changes within the oral mucosa.