Determination of the global gene expression profile of oral cancers using paraffin-embedded tissues

Type: Meeting Abstract

Content:

Introduction: Oral cancer is a common disease in Asia. However, our ability to deliver effective and targeted therapy remains limited by our lack of understanding of the molecular pathogenesis of oral carcinogenesis. One method to understand the nature of genes and gene products whose aberrant expression promote malignant transformation is by using microarrays. However, such studies have been limited by the availability of specimens with intact RNA and adequate clinical data to enable the identification and validation biomarkers either as predictive or therapeutic tools. Objective: We have determined the global gene expression profiles of oral squamous cell carcinoma (OSCC) of the buccal mucosa using formalin fixed paraffin-embedded specimens. Materials and **Methods**: Gene expression analyses using the DASL Assay were performed on 34 paraffin embedded tissues, of which 22 samples were OSCC of the buccal mucosa and 12 samples were normal surface epithelium of reactive lesions such as the fibroepithelial polyp from matched site. We used the Illumina Beadstudio Software to compare the expression profiles of normal and OSCC samples. We selected genes which were differentially expressed by at least two-fold (with the detection p-value <0.01) for further analysis. **Results**: A total of 47 genes were differentially expressed by at least two-fold between normal and OSCC. Deregulated genes included genes which were involved in cell signaling, adhesion and invasion, such as ITGB4, MMP1, MMP10, MMP7, CXCL9, and ALOX12. We have validated the over-expression of MMP1, ITGB4 and MMP10, and down-regulation of ALOX12 by quantitative real-time PCR. **Conclusion**: We have successfully conducted global gene expression studies using paraffin-embedded buccal mucosa specimens. This approach has enabled the identification of genes whose expression can help explain the aggressive nature of oral cancers arising from the buccal mucosa.

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