Reduced Expression of Coxsackievirus and Adenovirus Receptor (CAR) in Tumor Tissue Compared to Normal Epithelium in Head and Neck Squamous Cell Carcinoma Patients

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Replication-incompetent adenovirus has the problem of low transduction efficiency \textit{in vivo}. Coxsackievirus and adenovirus receptor (CAR) is a primary receptor for adenoviral infection and its expression level might be correlated with the sensitivity to adenovirus infection. To identify the relationship between CAR expression level and transfection efficiency, the expression of CAR was measured using squamous cell carcinoma of the head and neck (SCCHN). In addition, the CAR expression of tumor and normal tissues were compared in the same patients. It was found that CAR levels varied in SCCHN cell lines by RT-PCR and Western blot analysis. FACS analysis and adenovirus infection assay revealed that there was a good correlation between the level of CAR expression and the transfection efficiency. To identify the actual CAR expression patterns of human SCCHN tissues \textit{in vivo}, immunohistochemical staining was undertaken on frozen biopsies of SCCHN patients. In all six patients examined, normal tissues showed much stronger staining for CAR than tumor tissues. These results demonstrate that the level of CAR expression is important for determining adenoviral vector transduction efficiency in developing gene therapy strategy.