Prognostic Implications of Survivin Expression in Squamous Cell Carcinoma of the Larynx

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Introduction

Inhibitors of Apoptosis have been theorized to be potential future targets for cancer treatment due to the role of radiation-induced apoptosis in cancer cell death during treatment. One particular member of this family of interest in cancer therapy and prognosis is Survivin. Survivin is a small molecular protein involved in both the apoptosis and mitosis cellular pathways. This protein is expressed during embryonic and fetal development, but is normally undetectable in adult tissues. Recent studies have shown Survivin to be over expressed in lung, gastric, colorectal, and breast cancer. The level of expression of Survivin in many of these cancers has been associated with decreased survival, increased metastasis, and increased risk of recurrence. Survivin has also been shown to be a promising target for future chemotherapy.

It is the goal of this study to evaluate Survivin expression in our cohort of patients with squamous cell carcinoma of the larynx and evaluate its potential prognostic implications of expression in tumor tissue as well as patient’s serum.

Methods

This study is a retrospective review of patients evaluated by the Medical College of Georgia’s prospective head and neck tumor board. All patients had biopsy proven squamous cell carcinoma with tissue available for immunohistochemical staining through the Medical College of Georgia tumor bank. Serum levels of Survivin were quantitatively measured using Survivin enzyme-linked immunsorbent assay. Survivin expression in laryngeal tumor specimens obtained from the Medical College of Georgia’s tumor bank was evaluated using immunohistochemical stains. Chart review using electronic medical record was performed on all patients with data points collected of patient’s clinical stage, histological tumor characteristics, and treatment history, incidence of treatment failure, recurrence rates, and overall survival.

Results

A total of 40 patients met inclusion criteria. These were 82.5% male, 70% Caucasian, with an average at of 60.72 years. All 40 had a significant history of tobacco abuse and 72.5% had significant alcohol use. In our study, 37.5% of patients had recurrence with overall survival of 65%.

Immunohistochemical staining for Survivin was positive in 62.5% of the laryngeal tumor specimens. The vast majority of this staining was shown to be predominantly nuclear in nature. No differences were seen in survival of those patients with tumors having positive Survivin staining versus those with negative staining.

Serum Survivin presence was shown to have a significant correlation with tumor stage through ELISA testing. There was no influence on survival of serum Survivin expression.

Conclusions

Survivin expression in our patient population with squamous cell carcinoma of the larynx did not effect patient prognosis. Serum Survivin expression was significantly different in patients presenting with advanced tumor stage than those presenting with early tumor stage. Survivin expression may play a key role in future screening and treatment of squamous cell carcinomas of the head and neck.

References