

Research Symposium

CD44 as a Predictive Biomarker in Non-Small Cell Lung Cancer Patients Treated with Radiotherapy

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INTRODUCTION

Non-small cell lung cancer (NSCLC) remains a leading cause of cancer mortality, and outcomes after definitive radiotherapy for locally advanced disease are still poor. Predictive biomarkers that anticipate tumor response to radiotherapy are limited; CD44, a cancer stem cell or tumor-initiating cell marker linked to radioresistance, is a promising candidate.

OBJECTIVES

To determine whether pretreatment tumor CD44 expression predicts local response of NSCLC to radiotherapy.

METHODS

Tumor specimens from NSCLC patients (n=133) treated with radiotherapy alone or combined radiochemotherapy were analyzed using a protein expression assay. Patients presented with stage I (21%), II (15%), or III (64%) disease. Local tumor control following radiation therapy was as-

sessed, and logistic regression was used to evaluate factors predicting local failure, including CD44 expression.

RESULTS

CD44 expression exhibited both intra-tumoral and inter-tumoral heterogeneity. In univariate logistic regression, higher CD44 expression was associated with increased odds of local tumor control failure across intensity, proportion, and composite measures ($p = 0.027$, $p = 0.014$, and $p = 0.012$, respectively). Overall, higher CD44 expression was significantly associated with increased odds of local failure after radiotherapy (OR 1.44, 95% CI 1.08–1.92).

DISCUSSION

Pretreatment CD44 expression was associated with local control failure following radiotherapy in NSCLC. CD44 may serve as a predictive biomarker to identify patients at higher risk of local failure and inform treatment tailoring, but these findings require validation in larger, independent cohorts.

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