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Evaluation of PD-L1 Expression and Associated Tumor-Infiltrating Lymphocytes in Laryngeal Squamous Cell Carcinoma.

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Abstract

PURPOSE:

Programmed death-ligand 1 (PD-L1; also known as CD274 or B7-H1) expression represents a mechanism of immune escape for cancer. Our purpose was to characterize tumor PD-L1 expression and associated T-cell infiltration in primary laryngeal squamous cell carcinomas (SCC).

EXPERIMENTAL DESIGN:

A well-annotated cohort of 260 operable primary laryngeal SCCs [formalin-fixed paraffin-embedded (FFPE) specimens] was morphologically characterized for stromal tumor-infiltrating lymphocytes (TIL), on hematoxylin/eosin-stained whole sections and for PD-L1 mRNA expression by qRT-PCR in FFPE specimens. For PD-L1 protein expression, automated quantitative protein analysis (AQUA) was applied on tissue microarrays consisting of two cores from these tumors. In addition, PD-L1 mRNA expression in fresh-frozen tumors and normal adjacent tissue specimens was assessed in a second independent cohort of 89 patients with primary laryngeal SCC.

RESULTS:

PD-L1 mRNA levels were upregulated in tumors compared with surrounding normal tissue ($P = 0.009$). TILs density correlated with tumor PD-L1 AQUA levels ($P = 0.021$). Both high TILs density and high PD-L1 AQUA levels were significantly associated with superior disease-free survival (DFS; TILs: $P = 0.009$ and PD-L1: $P = 0.044$) and overall survival (OS; TILs: $P = 0.015$ and PD-L1: $P = 0.059$) of the patients and retained significance in multivariate analysis.

CONCLUSIONS:

Increased TILs density and PD-L1 levels are associated with better outcome in laryngeal squamous cell cancer. Assessment of TILs and PD-L1 expression could be useful to predict response to immune checkpoint inhibitors. Clin Cancer Res; 1-10. ©2015 AACR.