Abstract

Prevalence, Pattern and Impact of PD-L1 Expression and HPV-status in Head and Neck Squamous Cell Carcinoma

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Background: Early phase clinical studies showed activities of anti PD-L1/PD-1 antibody in head and neck squamous cell carcinomas (HNSCC). PD-L1 expression was extensively evaluated as a biomarker though no standardized method of detection has been defined. HPV status is a well-established prognostic maker of HNSCC. Prevalence, pattern, and impact of PD-L1 expression in HPV-associated HNSCC remain unclear and may vary in different ethnicity.

Method: HNSCC patients treated at the Ramathibodi Cancer Center between 1/2007 and 12/2013 were identified through the cancer registry database. Patient characteristics, treatments, and survivals were abstracted. Archival formalin-fixed paraffin-embedded (FFPE) tissues were retrieved for PD-L1 and p16 analyses. PD-L1 expression was evaluated by using an anti-human PD-L1 rabbit monoclonal antibody (clone SP142; Ventana) on an automated staining platform (Ventana). PD-L1 was evaluated on tumor cells (TC) and tumor-infiltrating immune cells (IC). PD-L1 expression was scored ranging between 0-100%. For survival analysis, specimens were scored as ≥5% on TCs or ICs to define PD-L1 positive. HPV status was determined by p16 immunohistochemistry.

Results: 204 HNSCC patients with available FFPE tissues were analyzed. PD-L1 on TCs was expression (≥1%) and highly expressed (≥50%) in 72.2% and 18.4% of patients, respectively. With a definition of PD-L1 ≥5% on TCs or ICs, 79.7% of patients was considered as PD-L1+. No statistically difference in patient characteristics between PD-L1 positive and negative, except age ≥65 was associated with a higher incidence of PD-L1 positive (53.4% vs 21.1%; p=0.001). Overall, 74 patients (36.3%) was p16+. No association of PD-L1 and p16 was observed (p=0.116). Overall survival (OS) was significantly longer in PD-L1+ patients (34.5 vs 21.5 months; p=0.044). In subgroup analysis of PD-L1/p16 status, OS was superior in patients with +/-, +/-, -/-, and -/+ status, respectively (67.4 vs 23.6 vs 15.8 vs 15.8 months; p=0.006).

Conclusion: A high prevalence of PD-L1 expression was observed in HNSCC. PD-L1 expression was a strong prognostic maker for OS, especially in p16+ HNSCC patients. These results support further development of anti PD-L1/PD-1 antibody in HNSCC.