PROGRAMMED DEATH LIGAND-1 (PD-L1) EXPRESSION AND PROGNOSTIC VALUE IN SYNOVIAL SARCOMA

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Aim: The interaction between PD-L1 expressed by neoplastic cells and its receptor PD-1 on activated T cells results in T cell suppression and inhibition of antitumor immune responses. Tumor PD-L1 expression has been associated with poor outcomes in many different cancer types. The aim of the study was to investigate the PD-L1 expression and correlation between PD-L1 expression and overall survival in one homogenous translocation-related sarcoma subtype - synovial sarcoma

Methods: We retrospectively analyzed formalin-fixed, paraffin-embedded (FFPE) tumor samples from 36 synovial sarcoma patients treated at our institution between April 1999 and October 2011. Of the 36 samples, 20 (56%) were from primary tumor biopsies and 16 (44%) were from lung metastases. PD-L1 immunohistochemistry (IHC) was performed using a rabbit polyclonal antibody (CD274, Cat No NB1-76769, dilution 1/4000, NOVUS Biologicals, Cambridge, UK). A semiquantitative method for evaluation of PD-L1 IHC was applied. The combination of intensity (0-no staining; 1-weak, 2-intermediate and 3-strong staining) and proportion score (0: 0-10%, 1:11-33%, 2:34-66% and 3:>67%) was used for further analysis. The association between PD-L1 expression and overall survival was investigated using Kaplan-Meier curve and the log-rank test.

Results: The median age was 39 years (range: 19-60). Majority of patients (83%) had localized disease at the diagnosis. Mean follow-up time for entire cohort was 48 months. Fifteen patients (42%) were still alive at the time of data analysis. The overall PD-L1 IHC staining positivity was 83% (1-3+). PD-L1 expression was observed both in primary (85%) and metastatic tumors (81%). Patients with tumor PD-L1 expression had a tendency towards shorter overall survival (median OS was 68 months in PD-L1 positive group and median OS has not yet been reached in PD-L1 negative group).

Conclusions: This is the largest study evaluating PD-L1 expression in synovial sarcoma. PD-L1 expression is present in the majority of synovial sarcoma and preliminary data implies to be a prognostic marker with PD-L1 expression associated with poorer outcomes. These findings may have implications for further studies with immunotherapy acting on PD-1/PD-L1 checkpoints in this type of soft tissue sarcoma.

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