Prognostic Significance of Programmed Cell Death Ligand 1 (PD-L1) Expression in Diffuse Large B – Cell Lymphoma

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Background: Programmed cell death 1 (PD1) expression has been discovered as a breakthrough exploration in the field of oncology. However, the role of PD-L1 as a prognostic marker in hematologic malignancies, especially DLBCL was still a matter of debate.

Objective: To determine the effect of PD-L1 expression on event free survival (EFS) and overall survival (OS) in diffuse large B-cell lymphoma (DLBCL), and to explore the correlation between PD-L1 expression and clinicopathological characteristics.

Methods: This was a retrospective study. Newly diagnosed patients with de novo DLBCL, treated with Rituximab plus CHOP or CHOP-like regimens from January 2010 to January 2016 at Chiang Mai University Hospital, were recruited. Immunohistochemistry (IHC) was done to determine cell of origin and C-MYC expression. PD-L1 IHC (Clone: SP263, Ventana Medical Systems) validating clone was selected, based on concordance result of Blueprint PD-L1 IHC project. At least 5,000 cells in tumor areas were counted to calculate percentage of membrane positivity at moderate to strong intensity (2+ and 3+) by using image analysis program (Aperio ImageScope Ver.12.1.0.5029: Leica Biosystem).

Results: Ninety-two DLBCL patients were enrolled with median age of 63 years and median follow-up of 25 months. The median EFS and OS were 18.5 and 24 months, respectively. By univariate analysis, stage, LDH, and international prognostic index (IPI) were the significant prognostic features for EFS and OS. Cell of origin and C-MYC expression had no significant impact on survival outcomes in our cohort. Sixty-five patients (70.7%) had PDL-1 expression more than 1 % of tumor cells, which was independently associated with better EFS (HR. 0.519, 95%CI 0.276-0.972, P = 0.042) and with a trend of favorable effect on OS ( HR. 0.539, 95%CI 0.272-1.066, P = 0.076 ) by multivariate analysis.

Conclusion: PD-L1 expression is an independent favorable prognostic feature of DLBCL. These results support paradoxical hypothesis of PD-L1 expression. Further study with higher number of patients is needed to validate our results.

Keywords: PD-L1, Programmed Cell Death Ligand 1, Diffuse large B cell lymphoma
Figure: Survival curves for event free survival and overall survival

- PD-L1 expression ≥ 1%
- PD-L1 expression < 1%

Event Free Interval Time (months) vs. Overall Survival Time (months)

P = 0.023 vs. P = 0.027