Plasma T-cell-derived circulating DNA level in advanced stage non-small cell lung cancer is not correlated with tumor-infiltrated lymphocyte but has a potential of prognostic value

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Background: Non-tumor derived circulating DNA (nt-cirDNA) of advanced non-small cell lung cancer (NSCLC) patient, even not yet clear originated, was associated with prognosis. In this study, we investigated whether T-cell-derived circulating DNA (T-cirDNA) was the majority part of nt-cirDNA nor correlated with tumor-infiltrating T-lymphocyte (T-TIL). Prognostic impact including demographic characteristics were integrated into the model.

Method: Using semi-quantitative real-time PCR with Taqman assay specific to VDJ segment of TCRβ (T-cell-receptor beta chain) was used to represented amount of T-cirDNA in plasma of 106 advanced stage NSCLC. Quantitative CD3-specific immunohistochemistry (IHC) staining from biopsy specimen, represented T-TIL, was done using Aperio ImageScope.

Results: T-cirDNA was detected in seventy-three advanced NSCLC patients with a median of 1.71 pg/ml [range 0 - 2.23x103]. Forty-six patients were assessed for T-TIL with a median CD3 0.22 cell/mm2 [range 0.02-2.34]. No correlation was found between T-cirDNA and T-TIL. From multivariable analysis, active smoking status was the only factor correlated with low T-cirDNA level (P<0.001). Kaplan Meier survival analysis of T-cirDNA ratio (T-cirDNA/total cirDNA) shown a trend of favor prognostic outcome for high T-cirDNA ratio (more than 0.03 %), HR 0.67 [95% CI 0.43-1.04, P=0.07].

Conclusions: Plasma T-cirDNA component revealed a trend of prognostic impact in advanced stage non-small-cell cancer patients.

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