



P1.247: Dynamic Monitoring of CTCs and EVs to Predict Chemoimmunotherapy Efficacy in Advanced Lung Cancer



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INTRODUCTION

Circulating tumor cells (CTCs), programmed cell death-ligand 1 (PD-L1) positive CTCs (PD-L1⁺CTCs) and extracellular vesicles (EVs) are important biomarkers in liquid biopsy and demonstrate the predictive value for prognosis. This study further investigated the clinical application scenarios of CTCs, PD-L1⁺CTCs and EVs, as well as the combined dynamic monitoring capacity to forecast chemoimmunotherapy efficacy in advanced lung cancer.

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- The median number of baseline CTCs was lower in NSCLC than SCLC, as were median PD-L1⁺CTCs number.
- Patients with lower number of CTCs or PD-L1⁺CTCs exhibited higher ORR.
- Baseline median EV counts were substantially elevated in NSCLC compared with SCLC.
- The combination of CTCs, PD-L1⁺CTCs and EVs improved predictive efficacy.

Future Direction for Research

- The association of CTC mutation characteristics and immunotherapy efficacy needs further research.
- Clinical trials may be conducted on CTC and EVs to predict immunotherapy efficacy of lung cancer.

METHODS

From November 2023 to December 2024, 53 patients with advanced lung cancer receiving first-line chemoimmunotherapy (30 NSCLC and 23 SCLC) were enrolled. CTC enumeration and PD-L1 expression were assessed using the CellSearch system at baseline and prior to each subsequent treatment cycles. EVs were analyzed by EVAnalyzer plugin. Objective response rate (ORR) and receiver operating characteristic (ROC) curves were analyzed. Single-cell whole-exome sequencing (WES) was conducted on isolated CTCs to characterize tumor-related pathogenic gene variants.

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RESULTS

- Baseline CTC and PD-L1⁺CTC Profiles Differ Between NSCLC and SCLC.
- Dynamic Decline of PD-L1⁺CTCs Predicts Chemoimmunotherapy Response.
- EVs Are Inversely Correlated with CTCs and Could Predict patient Response with CTCs/PD-L1⁺CTCs.
- Combination of CTCs, PD-L1⁺CTCs and EVs Achieves High Predictive AUC.
- Single-Cell WES Identifies Pathogenic CTC Somatic Variants Linked to Immunotherapy.

