



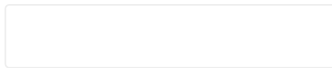
Session PO.CL11.11 - Circulating and Cell-free Biomarkers for Diagnosis and Monitoring of Cancer 3

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2237 / 26 - Detection of *CK-19* mRNA positive CTCs, isolated with a size-based microfluidics platform, in NSCLC patients under osimertinib therapy

April 1, 2019, 1:00 PM - 5:00 PM

Section 18



Presenter/Authors

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Disclosures

A. Ntzifa: None. **A. Kotsakis:** None. **V. Georgoulis:** None. **E. Lianidou:** None.

Abstract

Background: Patients with EGFRmt non-small cell lung cancer (NSCLC) and resistant to first and second generation EGFR tyrosine kinase inhibitors (EGFR TKIs), receive therapy with osimertinib (third generation EGFR TKI). However, some patients experience resistance to osimertinib and disease progression. Molecular characterization of circulating tumor cells (CTCs) could offer great advantages as a non-invasive approach for disease monitoring. In this study, we isolated CTCs using a label-independent microfluidic-based platform to elucidate resistance mechanisms in these NSCLC patients.

Materials and methods: Peripheral blood (PB) (15mL) was obtained at different time points from 27 patients with advanced NSCLC under osimertinib therapy. CTCs were isolated using the Parsortix™ system (ANGLE, Plc) and further harvested in Trizol reagent, followed by extraction of total RNA and cDNA synthesis. RT-qPCR was performed for *CK-19* and *B2M* (used as a reference gene) mRNA in the COBAS z480 system (Roche Diagnostics).

Results: PB samples were obtained at baseline (n=25), after one cycle of treatment with osimertinib (n=23), every 3 months (n=83) and at disease progression (PD) (n=16). *CK-19* positive CTCs were detected in 3/25(12%) baseline samples, 24/83(28.9%) during treatment at different time points; 5/23(21.7%) after one cycle of treatment, 8/23(34.8%) after 3 months, 3/17(17.6%) after 6 months, 4/12(33.3%) after 9 months, 1/2(50%) after 12 months, 3/5(60%) after 15 months; and 5/16(31.2%) at PD.

Conclusions: *CK-19* mRNA-positive CTCs were isolated using an epitope-independent enrichment microfluidic device. Further molecular characterization of these cells at the gene expression, DNA mutation, DNA methylation and miRNA level will provide biomarkers for the elucidation of resistance mechanisms in NSCLC patients treated with osimertinib.