Comparative value of using an ultra-fast NGS (Oncomine Precision Assay) on site, on matched liquid biopsy testing (LBx) and tissue biopsy testing (TBx) in advanced lung cancer patients. A pilot study from a single center (IHU RespirERA, Nice, France)

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Abstract

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Background: Liquid biopsy (LB) is increasingly used to detect actionable mutations in newly diagnosed advanced non-small cell lung cancer (aNSCLC) patients, though tissue biopsy (TB) remains the gold standard. The value of systematically combining LB and TB next-generation sequencing (NGS) for genomic profiling in this patient group remains uncertain. NGS ultrafast testing can be done using amplicon-based sequencing technologies, both from tissue and liquid biopsies samples. In this setting, this study was performed in order to evaluate the robustness of NGS LBx using the OPA panel including 50 key genes (Thermo Fisher Scientific, USA) comparatively to the performance of OPA panel used in matched TB samples at diagnosis of aNSCLC.

Methods: This single-center retrospective study assessed 58 samples collected at diagnosis from aNSCLC patients. Circulating-free DNA (cfDNA) NGS assay was compared for performance and concordance with matched solid tumor NGS in detecting ESCAT I/II genomic alterations.

Results: Out of 58 patients with stage IV non-small cell lung cancer adenocarcinoma, 51 LB samples yielded interpretable results. Among 24 TB presenting ESCAT I/II genomic alterations, 27 genomic alterations were identified as follow: 21 SNP, 4 ALK and ROS1 fusions, 1 MET CNV and 1 MET exon14 skipping. Seventeen SNP (81%) and 1 MET exon 14 skipping (100%) positively matched in LB.

Conclusions: LB-based NGS demonstrated high concordance with TB in newly diagnosed aNSCLC, for SNV ESCAT I/II genomic alterations detection. Liquid Biopsies NGS should be seen as a complementary tool to Tissue Biopsies NGS or an alternative when tissue samples are unavailable.

Do you have any conflicts of interest?

No, I do not have a conflict of interest.