Tyrosine kinase activity profiling as a predictive biomarker for clinical benefit to immune checkpoint inhibition in advanced melanoma and NSCLC

A substantial number of patients with cancer do not obtain clinical benefit from treatment with immune checkpoint inhibitors (ICIs). Previously, the potential role for tyrosine kinase activity profiles as a predictive biomarker for ICI response was shown [1,2]. In this ongoing multicenter prospective cohort study, tyrosine kinase activity profiles from peripheral blood mononuclear cells (PBMCs) are evaluated as a biomarker to predict tumor response to ICIs in patients with advanced stage melanoma or advanced stage non-small cell lung cancer (NSCLC).

METHODS

• 72 melanoma and 65 NSCLC patients treated with ICIs (first time)
• Classification analysis of the kinase activity profiles was based on binary grouping of patients with early progression vs. no/late progression and predictive performance was estimated using cross-validation
• Early progression was defined as progressive disease (PD) (RECIST v1.1) ≤24 weeks (melanoma cohort) and ≤12 weeks (NSCLC cohort)

RESULTS

Significant differences in kinase activity between the early PD vs. no/late PD group were observed

Predictive performance may improve when combined with existing biomarkers. This is achieved when tyrosine kinase profile is combined with low tumor PD-L1 expression in NSCLC patients

CONCLUSION

• Tyrosine kinase activity profiles discriminating between early PD vs. no/late PD are comparable between the melanoma and NSCLC cohort
• This blood based biomarker will be validated in an independent patient cohort

REFERENCES


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Table 1: Baseline characteristics of all melanoma patients (left; n=72) and all NSCLC patients (right; n=65)