BACKGROUND

Pre-treatment tumor biopsy slides from 124 metastatic melanoma patients treated with and/or PD-1 therapies at 7 academic centers were fluorescently stained with multiple immune markers in training (n=58) and validation (n=66) cohorts using multiplexed IFN sensor systems and automated Image Analysis (QUID) algorithms. Fluorescently stained slides were imaged using Vectra multiplex imaging system; biomarker positive slides and their co-localization were objectively scored in a blinded and pre-defined tumor areas using novel Automated Quantitative Analysis (QUID) algorithms.

Methods

Flow cytometry was performed by standard staining techniques, acquired on BD Fortessa X30 flow cytometer.

RESULTS

Table 1: Patient Cohort Characteristics

Identification of Biomarkers Predicting Response to anti-PD-1 Therapies

- In the training cohort, high PD-1/L1 interaction scores and/or IDO-HLA-DR co-expression were associated with shorter overall survival (p=0.005).
- In the validation cohort, patients with high PD-1/L1 or IDO-HLA-DR were more likely to respond to anti-PD-1 treatment (p=0.002) and experienced a fold increase in progression free survival (p=0.001) and 35% and 50% overall survival (p=0.001).
- Multivariate analyses revealed that these findings were independent of BRAF mutation, metastatic disease burden, and co-treatment with other therapies.

Methodology

The training cohort (n=112) included patients who had higher levels of PD-1/L1 interaction scores and/or IDO-HLA-DR expression.

In the validation cohort (n=58) patients were enriched for clinical response and progression.

CONCLUSIONS

- Complementary methods of immune suppression underlying anti-PD-1 outcomes was identified (see model).
- Correlation with clinical outcome was validated in one of the largest real world multi-cohort analyses.
- Test-positive patients may be more suitable for single agent anti-PD-1 therapies.
- Findings may be applicable for selecting patients for PD-1 and ID-1 blocking therapies.

REFERENCES

1. Szotek C. Cancer Control Research, Volume 10, Issue 3
2. 120 authors. DAVAN status: New insights on DAVAN in outcomes of patients with advanced melanoma.

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