Control/Tracking Number: 2022-RA-674-WCLC
Activity: Regular Abstract
Current Date/Time: 2/28/2022 2:53:49 AM

CHARACTERISATION OF T CELL RECEPTOR REPERTOIRE IN NON-SMALL CELL LUNG CANCER PATIENTS TREATED WITH IMMUNOTHERAPY

Author Block: A.S. Goñi[1], A. Ramírez[2], M. Cruellas[3], P. Esteban[2], E.M. Galvez[4], M. Gascon-Ruiz[5], D. Isla[5], L. Martinez-Lostao[6], M. Ocariz[5], J.R. Paño[5], J. Pardo[2], E. Quilez[5], I. Torres-Ramón[5], A. Yubero[5], M. Zapata[5], R. Lastra[5]

[1]Hospital Clínico Universitario Lozano Blesa, Zaragoza/ES ,[2]Aragon Health Research Institute, Zaragoza/ES, Zaragoza/ES ,[3]Hospital Vall d'Hebron, Barcelona/ES ,[4]4Instituto de Carboquímica CSIC, Zaragoza/ES ,[5]Hospital Clinico Lozano Blesa, Zaragoza/ES ,[6]Aragon Health Research Institute,, Zaragoza/ES

Abstract:
Introduction: Non-small cell lung cancer (NSCLC) therapy has experienced important changes in survival benefit and durable anti-tumor responses due to immune checkpoint blockers (ICBs). However, ICBs show some major limitations including low response rate and drug resistance in unselected patients. Despite the development of new predictive biomarkers, such as PD-L1 expression, microsatellite instability (MSI), or tumor mutation burden (TMB), there is an urgent need for biomarkers that identify which patients will benefit more from ICBs and define the reasons for failure of the treatment. Analysis of peripheral blood T cell receptor beta chain (TCR-β) repertoire and other serum biomarkers may provide information about the immune response in ICBs treated NSCLC patients.
Methods: Between April 2019 and October 2020 and with a minimum of one-year follow-up, a total of 55 unresectable locally advanced and advanced NSCLC patients treated with ICBs were enrolled. For all patients, demographic, clinicopathological characteristics and variables related to immune-mediated toxicity were collected. Written informed consents were provided. TCR-β analysis was carried out in 44 peripheral blood samples pretreatment and complementarity determining region (CDR3) sequencing was performed using Ion Torrent Oncomine assay (Thermo Fisher Scientific). 11 samples could not be used for TCR-β analysis due to insufficient sample or lack of RNA integrity.
Results: 55 patients were included. The majority were males (70.9%) and smokers (96.4%), ECOG 0 (65.5%) with a median age of 65 years. The most frequent histology was adenocarcinoma (60%), being stage IV 70.9% of all lung cancer included and the main indication for treatment with ICBs was palliative in pretreated patients. PD-L1 was >=50% in 34% of patients. The ORR was 63.6% (35/55), with a mean time from the start of ICBs to the response of 2.74 months (SD 2.59) and 16 patients presented durable clinical benefit. 45.5% patients presented immune-mediated toxicity. The median duration of follow-up was one year and 41.8% (23/55) were alive at the time of data cut-off with a median overall survival of 19 months (CI: 11.13-26.87). Regarding descriptive data of the TCR-β features, the mean of shanon diversity pretreatment was 10.7 (SD 2.56), TCR-β evenness 0´77 (SD 0´14) and the mean of TCR- β convergence was 0´01 (SD 0´01) in the 44 peripheral blood samples analyzed.
Conclusions: TCR-β repertoire has emerged as a novel prognostic and predictive biomarker of response to ICB therapy. This study provides a detailed descriptive analysis of pretreatment peripheral blood TCR- β features and cytokines involved in the immune response. Nevertheless, a combination of biomarkers may be the optimal tool to predict ICBs efficacy in lung cancer patients.

Track (Complete): 4. Tumor Biology and Biomarkers
Funding Source (Complete):
    * **Is your study funded in any way by a Pharmaceutical/Biotech Company?**: No

Terms & Conditions (Complete):
    I agree: : True
    I agree: : True

Education Awards (Complete):
    * **Will you be applying for an Early Career Award?**: No
    * **Will you be applying for a Developing Nation Award?**: No
    * **Will you be applying for a Patient Advocate Award?**: No
    * **Will you be applying for the Nurse or Allied Health Professional Award?**: No

Keywords (Complete): LUNG CANCER ; BIOMARKER ; T-CELL RECEPTOR
 Status: Finalized

♀ Feedback