

The mid-term impact of the SARS-CoV-2 infection on senescence profile and immune checkpoints in people living with HIV.

Verónica Briz¹, Celia Crespo-Bermejo¹, Óscar Brochado-Kith¹, Sergio Grande-García¹, Violeta Lara-Aguilar¹, Manuel Llamás-Adán¹, Sonia Arca-Lafuente¹, L. Martin-Carbonero², Ignacio de los Santos², Maria A. Jimenez-Sousa¹, S. Resino¹, Juan Berenguer², Ricardo Madrid³, and Amanda FERNÁNDEZ-RODRÍGUEZ¹

¹Instituto de Salud Carlos III Campus de Majadahonda

²Centro de Investigacion Biomedica en Red Enfermedades Infecciosas

³Universidad Complutense de Madrid

November 9, 2023

Abstract

The mid-term impact of SARS-CoV-2 infection on senescence profile and immune checkpoints biomarkers in people living with HIV (PLWH) was assessed. Cross-sectional study in 95 PLWH on ART stratified by SARS-CoV-2 infection: a) 48 PLWH previously infected (PCR+) (HIV/SARS); b) 47 PLWH controls without previous infection (HIV). Plasma biomarkers (n=44) related to cell immune checkpoint molecules, associated with the Senescence-Associated Secretory Phenotype (SASP), and related to pro and anti-inflammatory cytokines were assessed by Procartaplex Multiplex Immunoassays (Xmap-Luminex technology). Differences between groups were analyzed using a generalized linear model, adjusted by sex and ethnicity and corrected by false discovery rate. Significant values were defined as the adjusted arithmetic mean ratio [?]1.2 or [?]0.8; q-value<0.1. The relationship between plasma biomarkers was evaluated by Spearman correlation (significant correlations rho[?]0.3 and q-value<0.1). PLWH had a median age of 45 years and 80% were men. All PLWH infected by SARS-CoV-2 had a symptomatic infection, 83.3% as mild, and with a median of 12 weeks after diagnosis of SARS-CoV-2 infection. HIV/SARS group showed higher levels of the cell immune checkpoint plasma biomarkers CD80, PDCD1LG2, CD276, PDCD1, CD47, HAVCR2, TIMD4, TNFRSF9, TNFRSF18, and TNFRSF14 respect to HIV group. The SASP biomarkers LTA, CXCL8, and IL13 and the inflammatory biomarkers IL4, IL12B, IL17A, CCL3, CCL4, and INF1A showed significantly higher levels in the HIV/SARS group. SARS-CoV-2 infection in PLWH leads to significant medium-term disruption in plasma immune checkpoint molecules and inflammatory cytokines, highlighting SASP-related. This could be a risk factor for the emergence of complications in PLWH.

Hosted file

Manuscript JMV.docx available at <https://authorea.com/users/697931/articles/685866-the-mid-term-impact-of-the-sars-cov-2-infection-on-senescence-profile-and-immune-checkpoints-in-people-living-with-hiv>