GiC XXXIX WEB CONFERENCE 14 - 18 GIUGNO 2021
CONFERENZA NAZIONALE DI CITOMETRIA
AGGIORNAMENTI E INNOVAZIONI
DELLA CITOMETRIA NELLE APPLICAZIONI
CLINICHE E DI RICERCA

CHARACTERIZATION OF T LYMPHOCYTES IN SEVERE COVID-19 PATIENTS

Fenoglio D[1,2], Dentone C[3], Parodi A[2], Di Biagio A [3,4], Bozzano F[3], Vena A[3], Fabbi M[2], Ferrera F[1], Altosole T[1], Bruzzone B[5], Giacomini M[6], Pelosi P[7,8], De Maria A[1,3,4], Bassetti M[3,4], De Palma R [9], Filaci G[1,2]

[1]Excellence Centre for Biomedical Research, University of Genoa;
[2]Biotherapy Unit, IRCCS Ospedale Policlinico San Martino;
[3]Division of Infectious Diseases, IRCCS Ospedale Policlinico San Martino;
[4]Dep of Health Sciences, University of Genoa;
[5]Hygiene Unit, IRCCS Ospedale Policlinico San Martino;
[6]Dep of Informatics Bioengineering, Robotics, and Systems Engineering (DIBRIS), University of Genoa;
[7]Dep of Surgical Sciences and Integrated Diagnostics, University of Genoa;
[8]Anesthesia and Intensive Care Unit, IRCCS Ospedale Policlinico San Martino;
[9]Internal Medicine, Clinical Immunology and Translational Medicine Unit, IRCCS Ospedale Policlinico San Martino.

Introduction. The SARS-CoV-2 infection can lead to different clinical pictures (from asymptomatic/pauci-symptomatic infection to moderate/severe forms of disease), suggesting that the clinical picture of the infection might strictly depend on the outcome of the SARS-CoV-2-immune system interaction in the patient . Therefore, it is conceivable that patients with the worst forms of disease could have an immunological imbalance due to hampered virus eradication and overwhelming inflammatory response. In order to investigate on the immunological dynamics in SARS-CoV-2 infected patients with severe disease, we performed a study on peripheral T lymphocytes from patients with severe COVID-19 in comparison to T cells from healthy controls.

Methods. In this observational study, blood samples from 13 patients with severe COVID-19 and 10 healthy controls untreated HNSCC patients were evaluated by multicolor flow cytometry to delineate: CD4+ and CD8+ T cell maturation and activation levels, frequency of CD4+ and CD8+ T regulatory cells (Treg), dynamic of Th subsets by espression of chemokine receptors.

Results. The data show that a robust immune response develops in patients with severe COVID-19 characterized by relative expansion of T cell subsets typical of persistent viral infection and prone to sustain inflammation (Th2- and Th17-oriented TFH) as well as T cell subtypes devoted to regulation (CD8+ Treg), and by relative reduction of Th1 cells, which are those associated with eradication of a viral infection. This pathogenic mechanism could lead us to envisioning possible new form of biological target therapy.