Effects of a therapeutic dendritic cell-based vaccine for HIV-1 infection on innate immunity

José Peña,1 Mario Frías,1 Laura Castro-Orzag,1 Hodei Arberas,2 Rafael González,3 Felipe García,2 Teresa Gallart,2 Alberto C. Guardo,5 Jose María Gatell,1 Montserrat Plana1 and the Dc2-Manon07 vaccine research group

1Infectious Diseases Department, Hospital Clinic-institut d’Investigacions Biomèdiques August Pi I Sunyer (IDIBAPS). Barcelona. Spain
2Inmunology Department, Mamónides Institute for Biomedical Research of Córdoba-Reina Sofia Hospital. Córdoba. Spain

ABSTRACT

Changes in NK cells according to their phenotype and expression of their regulatory receptors were analysed in a double-blind, controlled study of ART-naive HIV-seropositive patients, who had been vaccinated with monocyte-derived dendritic cells pulsed with inactivated HIV-1 and autologous virus. This work extends another recently published study of the same group of HIV-1-vaccinated patients, which had demonstrated that the viral load significantly decreases and correlates inversely with an increasing HIV-specific T cell responses in vaccinated patients, but not in controls treated with placebo.

Our results indicate that, in vaccinated patients, the vaccine induces a raise in the level of the CD56neg NK cell subpopulation, while the levels of the CD56dim NK cells expressing the inhibitory receptor CD85j/ILT-2 fell in the same group of patients.

Trend line [equation: y = -1.341ln(x) – 2.4406], which shows that the percentage of CD56neg NK cells expressing the inhibitory receptor CD85j/ILT-2 fell in the same group of patients.

The clinical use of antiretroviral therapy (ART) in HIV-1 infection has several drawbacks, such as its high toxicity when treatment continues for a long period of time and the frequent emergence of viral resistance. Based on this, several groups are attempting to develop new therapeutic modalities for HIV infected patients, including therapeutic vaccines. In this context, we are working in a therapeutic vaccine based on the administration of monocyte-derived dendritic cells (DCs) pulsed with HIV-1 obtained from the same patient. Their efficacy were analysed by measuring at different times viral parameters of the adaptive and innate immune response.

We present here the results obtained by analysing NK cells subpopulations and their regulatory receptors in patients vaccinated with the DCs – autologous HIV-1 vaccine.

The relevance of this study is based on the fact that although it has been described that NK cell dysfunctions contribute to the progression of HIV-1 infection, these cells, have never been previously analysed, in trials of HIV-1-therapeutic vaccines.

REFERENCES