



ORAL PRESENTATION

Open Access

The combination of arsenic, interferon-alpha, and zidovudine restores an “immunocompetent-like” micro-environment in patients with adult T-cell leukemia lymphoma

Ghada Kchour¹, SA Rahim Rezaee², Reza Farid³, Akram Ghantous⁴, Houshang Rafatpana³, Mahdi Tahrini⁵, Mohamad-Mehdi Kooshyar⁶, Hiba El Hajj⁷, Fadwa Berry¹, Roudaina Nasser⁷, Abbas Shirdel⁶, Zeina Dassouki⁷, Mohamad Ezzedine¹, Hossein Rahimi⁶, Ardeshir Ghavamzadeh⁸, Hugues de Thé⁹, Olivier Hermine¹⁰, Mahmoud Mahmoudi³, Ali Bazarbachi^{7*}

From 16th International Conference on Human Retroviruses: HTLV and Related Viruses
Montreal, Canada. 26-30 June 2013

HTLV-I associated adult T-cell leukemia/lymphoma (ATL) carries a dismal prognosis due to chemo-resistance and immuno-compromised micro-environment. The combination of zidovudine and interferon-alpha (IFN) significantly improved survival in ATL. Promising results were reported by adding arsenic trioxide to zidovudine and IFN. Here we assessed Th1/Th2/T_{reg} cytokine gene expression profiles in 16 ATL patients before and 30 days after treatment with arsenic/IFN/zidovudine, in comparison with HTLV-I healthy carriers and sero-negative blood donors. ATL patients at diagnosis displayed a T_{reg}/Th2 cytokine profile with significantly elevated transcript levels of Foxp3, interleukin-10 (IL-10), and IL-4 and had a reduced Th1 profile evidenced by decreased transcript levels of interferon- γ (IFN- γ) and IL-2. Most patients (15/16) responded, with CD4⁺CD25⁺ cells significantly decreasing after therapy, paralleled by decreases in Foxp3 transcript. Importantly, arsenic/IFN/zidovudine therapy sharply diminished IL-10 transcript and serum levels concomitant with decrease in IL-4 and increases in IFN- γ and IL-2 mRNA, whether or not values were adjusted to the percentage of CD4⁺CD25⁺ cells. The observed shift from a T_{reg}/Th2 phenotype before treatment toward a Th1 phenotype after treatment with arsenic/IFN/zidovudine may play an important role in restoring an immuno-competent

micro-environment, which enhances the eradication of ATL cells and the prevention of opportunistic infections.

Authors' details

¹Department of Biology, Faculty of Sciences, Lebanese University, Hadath, Lebanon. ²Microbiology and Virology Research Center, Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran. ³Immunology Research Centre Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran. ⁴Lebanese American University, School of Arts and Sciences, Lebanon. ⁵Islamic University, Faculty of Nursing Sciences, Lebanon. ⁶Department of Internal Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. ⁷Department of Internal Medicine, American University of Beirut, Beirut, Lebanon. ⁸Tehran University of Medical Sciences, Tehran, Iran. ⁹INSERM UMR 944 and CNRS UMR 7212, Hôpital Saint Louis, Paris, France. ¹⁰CNRS UMR 8147, Hôpital Necker, Paris, France.

Published: 7 January 2014

doi:10.1186/1742-4690-11-S1-O4

Cite this article as: Kchour et al.: The combination of arsenic, interferon-alpha, and zidovudine restores an “immunocompetent-like” micro-environment in patients with adult T-cell leukemia lymphoma.

Retrovirology 2014 **11**(Suppl 1):O4.

⁷Department of Internal Medicine, American University of Beirut, Beirut, Lebanon

Full list of author information is available at the end of the article