A 14-day treatment with a cyclooxygenase 2 (COX-2) inhibitor reduces inflammation in the lymphoid tissues of HIV-infected patients without HAART - a pilot study with positron emission tomography (PET/CT) assessment

Background: Immune activation plays a major role in the pathogenesis of the complications induced by HIV infection. Previous studies by biopsy or PET/CT have demonstrated persistent inflammation in the lymphoid organs of HIV infected patients, with potentially irreversible consequences on the properties of these microenvironments. Macrophages infected with HIV upregulate COX-2 and the release of PGE2 participates in the neurological complications of HIV infection.
Objective: To determine if blocking PGE2 secretion by a COX-2 inhibitor can reduce FDG uptake in the lymphoid tissues and improve immunologic parameters of HIV infected patients without HAART.
Methodology: 7 patients infected with HIV-1 (6 with chronic infection and 1 with primary HIV infection) without HAART were included in the trial. FDG PET/CT studies were performed following standard oncological procedures on day 0 and 14 (posttreatment with Celecoxib 200 mg bid). Any increased nodal uptake in the cervical, axillary, mediastinal, mesenteric, iliac and inguinal regions was recorded. The Standardized Uptake Value (SUVmax) was measured in the ROIs and the lesion to liver activity ratios were calculated. Both the sum of the SUVmax and SUV ratios were calculated to obtain a global metabolic score.
Results: At baseline, all patients showed increased FDG uptake in various nodal stations. After treatment with celecoxib, six patients with chronic infection showed a statistically significant decrease in global metabolic score ranging from 9 to 28%. No decrease was observed in the subject with PHI. Viral load remained stable but there was a strong increase of CD4/CD8 ratio in all patients (0.31±0.70 vs. 0.51 ± 0.11, p=0.04). There was a selective decrease of CD8+ CD38+ T cells which failed to reach statistical significance.
Conclusions: PGE2 secretion plays a role in the increased metabolic activity of lymphoid tissues in HIV-infected patients without HAART and might also take part in their immunologic abnormalities.

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