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Activation of HIV-specific CD8+ T lymphocytes by histamine depends also on the total NK cells

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Purpose of the study

The immune dysfunction induced by HIV is characterized not only by depletion of CD4+ T-cells, but also with hypoergy of cytotoxic CD8+ T lymphocytes (CTLs), facilitating the persistence of HIV in the host. We have studied the ability of histamine to stimulate HIV-specific CTLs in HIV+ patients. We evaluated this stimulation in the context of the total number of NK cells.

Methods

Blood samples from 54 HIV-positive subjects were examined. We measured in vitro activation of HIV-specific CTLs (IFN-gamma production) using stimulation by two HIV peptides (gp 120 and gag), histamine, and/or IL-2 and cimetidine by means of ELISPOT assay (BD Bioscience). This activation was compared with total number of NK cells measured using monoclonal antibodies and flow cytometry (BD Facscan). Pair t-test was used for evaluation of the statistical significance.

Summary of results

We found statistically significant differences in activation of HIV-specific CTLs after incubation with peptides compared to peptides + histamine ($p = 0.013$), peptides + histamine + IL-2 ($p = 0.021$), and peptides + histamine + cimetidine ($p = 0.034$). This differences were detected only in patients with levels of NK cells over 0.1×10^9/l ($p = 0.05$) in comparison with those with level under 0.1×10^9/l ($p = 0.18$).

Conclusion

HIV-specific CTLs production of IFN-gamma was statistically significantly higher after stimulation by HIV peptides and histamine in HIV-positive subjects compared to the production after stimulation by HIV peptides alone and this production depended also on the number of total NK cells.

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