

Late stage R5 HIV-1 infection induces cytokine and CCR5 expression

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2005 APR 4 - (NewsRx.com) -- Late stage R5 HIV-1 infection induces cytokine and CCR5 expression.

According to recent research from the United States, "Late-stage CCR5 tropic human immunodeficiency virus type 1 (HIV-1) isolates (R5 HIV-1) can deplete nearly all CD4+ thymocytes from human thymus/liver grafts, despite the fact that fewer than 5% of these cells express CCR5.

"To resolve this paradox, we studied the replication and cytopathic effects (CPE) of late-stage R5 HIV-1 biological clones from two progressors and two long-term nonprogressors (LTNP) in fetal thymic organ culture (FTOC) with and without added cytokines."

"We found that R5 HIV-1 clones from progressors but not LTNP were cytopathic in untreated FTOC. Moreover," said investigators, "R5 HIV-1 clones from progressors replicated to higher levels than LTNP-derived R5 HIV-1 clones in this system."

"In contrast, when FTOC was maintained in the presence of interleukin 2 (IL-2), IL-4, and IL-7, both progressor and LTNP clones exhibited similar replication and CPE, which were equal to or greater than the levels achieved by progressor-derived R5 HIV-1 clones in untreated FTOC.

"This finding was likely due to IL-2-induced CCR5 expression on CD4+ thymocytes in FTOC," said S.K. Choudhary and colleagues at the University of California, Irvine.

Choudhary continued, "R5 HIV-1 clones showed greater pathogenesis for CCR5+ cells but also showed evidence of CPE on CCR5- cells. Furthermore, infection of FTOC by R5 HIV-1 induced IL-10 and transforming growth factor beta (TGF-beta) expression. Both IL-10 and TGF-beta in turn induced CCR5 expression in FTOC."

"Induction of CCR5 expression via cytokine induction by R5 HIV-1 infection of CCR5+ thymocytes likely permitted further viral replication in newly CCR5+ thymocytes. CCR5+ expression, therefore, is a key determinant of pathogenesis of R5 HIV-1 in FTOC," the authors concluded.

Choudhary and colleagues published their study in the Journal of Virology (R5 human immunodeficiency virus type 1 infection of fetal thymic organ culture induces cytokine and CCR5 expression. J Virol, 2005;79 (1):458-471).

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The information in this article comes under the major subject areas of Irvine, CA, USA, HIV/AIDS, CCR5 Expression, Disease Progression and Late Stage R5 HIV-1.

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