TheraVac-02: An open-label phase I study to evaluate the safety of the HIV-1 vaccine MVA-B in chronic HIV-1 infected patients successfully treated with HAART

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Background:
An effective therapeutic HIV-1 vaccine could evoke protective immune responses in HIV-1 infected patients successfully treated with Combination Antiretroviral Therapy (cART). The candidate vaccine evaluated in this study is the recombinant vaccinia vaccine MVA-B, containing HIV-1 *env* (clade B) and *gag-pol-nef*. Primary objective is to evaluate the safety of MVA-B during 12 weeks after the first vaccination; secondary objectives include the evaluation of HIV-1 specific immune responses.

Methods: Ten HIV-1 (clade B) infected patients on concomitant successful cART were vaccinated i.m. with $10^{7.5}$ pfu (1 mL) of MVA-B on day 0 and day 28, followed by frequent visits up to week 12 and visits every 3 months up to week 48. Specific vaccination related local and systemic reactions were recorded until week 12. Standard safety parameters, plasma HIV-1 RNA (pVL) and CD4/CD8-counts were assessed at every visit. HIV-1 specific immune responses were evaluated by Elispot at baseline, week 2, 6, and 12.

Results: At baseline, patients had a median age of 50 years (range 29-70), a CD4-count of 520 (290-830) $x10^6$/L, and a nadir CD4-count of 240 (190-330) $x10^6$/L. All had a pVL <40 copies/mL. 8 patients were previously vaccinated against smallpox.
Only grade 1 local injection site reactions were observed (predominantly mild injection site pain, in 8 and 6 patients after vaccination 1 and 2), as well as a few grade 1/2 systemic reactions. 6 of the 10 patients generated at least 1 new HIV-1-specific T-cell response up to week 12 measured by Elispot. The median fold increases of the sum of all HIV-1-specific T-cell responses was 1.0 (range 0.1-14.8) at week 2; 1.9 (0.2-6.4) at week 6; and 1.5 (0.1-17.6) at week 12.

Conclusions: MVA-B is safe and well tolerated in HIV-1 infected patients on concomitant successful cART. 6 of the 10 patients generated at least 1 new HIV-1 specific response.