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Mitochondrial DNA depletion in oocytes of HIV-infected antiretroviral-treated infertile women.

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BACKGROUND: HIV-infected women under highly active antiretroviral therapy (HAART) undergoing in vitro fertilization (IVF) have a lower pregnancy rate than noninfected controls, which depends on oocyte-related factors. We hypothesized that mitochondrial toxicity caused by antiretrovirals could be the underlying mechanism of such disturbance. **METHODS:** We have studied 16 and 19 frozen-thawed oocytes obtained after oocyte retrieval IVF cycles from 8 and 14 infertile HIV-infected and uninfected women, respectively, matched by age. At inclusion, HIV-positive women had been infected for >13 years and had received HAART for >9 years, including at least one nucleoside reverse transcriptase inhibitor. All of them had undetectable HIV viral load and a good immunological status. Mitochondrial DNA (mtDNA) content was determined by quantitative real-time PCR in each individual oocyte. **RESULTS:** HIV-infected infertile women on HAART showed significant oocyte mtDNA depletion when compared with uninfected controls (32% mtDNA decrease, $P<0.05$). This oocyte mtDNA depletion was even greater on those HIV-infected women who failed to become pregnant when compared with controls (39% mtDNA decrease, $P=0.03$). No significant correlation was found between mtDNA oocyte content and cumulative doses of antiretrovirals or the immunological status of HIV patients. **CONCLUSIONS:** Oocytes from infertile HIV-infected HAART-treated women show decreased mtDNA content, and this could explain their poor reproductive outcome.

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