Vitamin A and risk of HIV-1 seroconversion among Kenyan men with genital ulcers.

MacDonald KS1, Malonza I, Chen DK, Nagelkerke NJ, Nasio JM, Ndinya-Achola J, Bwayo JJ, Sitar DS, Aoki FY, Plummer FA.

Author information
1Department of Microbiology, Mount Sinai Hospital, Toronto, Canada. kmacdonald@mtsiniain.on.ca

Abstract

BACKGROUND:

Vitamin A is involved in normal immune function and the maintenance of mucosal integrity through complex effects on cellular differentiation.

OBJECTIVE:

We sought to determine whether serum vitamin A levels were associated with altered susceptibility to primary infection with HIV-1 in men with high-risk sexual behaviour and genital ulcers who presented for treatment at an STD clinic in Nairobi, Kenya.

METHODS:

HIV-1 seronegative men were prospectively followed. Vitamin A levels at study entry were compared among 38 men who HIV-1 seroconverted versus 94 controls who remained HIV seronegative.

RESULTS:

Vitamin A deficiency (retinol less than 20 microg/dl) was very common and was present in 50% of HIV-1 seroconverters versus 76% of persistent seronegatives. Seroconversion was independently associated with a retinol level greater than 20 microg/dl (HR 2.43, 95% CI 1.25-4.70, \( P = 0.009 \)), and a genital ulcer aetiology caused by Haemophilus ducreyi (HR 3.49, 95% CI 1.03-11.67, \( P = 0.04 \)). Circumcision was independently associated with protection (HR 0.46, 95% CI 0.23-0.93, \( P = 0.03 \)).

CONCLUSION:

Vitamin A deficiency was not associated with an increased risk of HIV-1 infection among men with concurrent STD. A decreased risk of HIV-1 seroconversion was independently associated with lower retinol levels. The effects of vitamin A on macrophage and lymphoid cell differentiation may paradoxically increase mucosal susceptibility to HIV-1 in some vulnerable individuals, such as men with genital ulcers. Lack of circumcision and chancroid are confirmed as important co-factors for
heterosexual HIV-1 transmission. The role of vitamin A in heterosexual HIV-1 transmission requires further study.

PMID: 11317002 [PubMed - indexed for MEDLINE]