

Nutrition News for Africa

Abstract - May 31, 2007

An article entitled “Multivitamin supplementation improves hematologic status in HIV-infected women and their children in Tanzania ” was published by Fawzi et al. in the *American Journal of Clinical Nutrition* 2007 ; 85:1335-43.

Introduction

At the end of 2005, 40 million persons worldwide were living with HIV or AIDS. Anemia is a frequent complication that occurs in 20–80% of HIV-infected persons and is associated with faster disease progression and mortality. The authors have completed a trial among HIV-infected Tanzanian women to examine the efficacy of maternal vitamin supplementation during pregnancy and after delivery on pregnancy outcomes and health outcomes among women and their children. All women received daily supplements of iron and folic acid during pregnancy, but not thereafter, according to the standard of care in Tanzania . Here, the authors examine the effect of the supplements on hemoglobin concentrations and the risk of anemia among the women and their children.

Subjects and methods

A total of 1078 HIV-infected pregnant women were enrolled in Dar es Salaam, Tanzania, during a 2-y period starting in April 1995 and were followed with their children until August 2003. Eligible women were randomly assigned in blocks of 20 to a daily oral dose of 1 of 4 regimens for the total duration of follow-up: 1) vitamin A and β -carotene alone; 2) multivitamins (excluding vitamin A and β -carotene); 3) multivitamins + vitamin A and β -carotene; or 4) placebo. Women were requested to provide a blood specimen at baseline and at 6-month intervals thereafter for measurement of hemoglobin concentrations. Because of the beneficial findings on adverse pregnancy outcomes that were reported earlier from the trial, all women who became pregnant subsequent to May 1998 were given open-label multivitamins for the duration of their pregnancy; these women reverted to their prepregnancy-blinded regimen after delivery. In September 2000, vitamin A and β -carotene were eliminated from the 2 vitamin A-containing regimens because of an observed increased risk of transmission of HIV-1 to children associated with maternal vitamin A supplementation.

Results

The treatment groups did not differ in the measured baseline characteristics. Infant feeding practices were not significantly different across the 4 treatment arms. Mean compliance was high and not significantly different between the 4 treatment arms. During the whole period, women who received multivitamins had hemoglobin concentrations 0.33 g/dL higher than women who were not given multivitamins.

Discussion

Supplementation with vitamins B-complex, C, and E resulted in a significant improvement in hemoglobin concentrations among women and children. This intervention also significantly reduced the risks of anemia. The effects of vitamin A and β -carotene alone were mostly not significantly different from placebo. The findings of the beneficial effect of multivitamins were sustained beyond the end of pregnancy through the first 2 years and even 4 years of the trial. The improvement in hematologic status may provide an additional mechanism for the improved clinical outcomes. It is also possible that the enhanced clinical outcomes resulted in further reduction in the risk of anemia through better absorption of essential nutrients and reduced oxidative stress that contributes to the cause of anemia. Thus, supplementation would help interrupt a vicious cycle that leads to increased severity of anemia, worse clinical outcomes, and ultimately death. Maternal multivitamin supplementation continued through the postpartum period resulted in improvements in hemoglobin concentrations among the children. There are, however, some concerns about the provision of iron in HIV infection because it may contribute to oxidative stress and lead to faster disease progression. Data from randomized trials are needed

to examine the safety and efficacy of iron supplementation in the context of HIV infection. In this trial all children, regardless of the regimen assigned to their mothers, were given periodic large doses of vitamin A, starting at 6 months of age according to the national standard of care. This supplementation may have reduced the chances of finding a protective effect of maternal supplements, if such an effect existed. Among HIV-infected women, multivitamin supplementation provided during pregnancy and in the postpartum period resulted in significant improvements in hematologic status among women and their children, providing further support for the value of multivitamin supplementation to HIV-infected adults.