Progression of Nonanemic Macrocytosis to Anemia in HIV-infected Patients Receiving Zidovudine-containing Regimens

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Background: Nonanemic macrocytosis is frequently observed among HIV-infected patients treated with zidovudine-containing antiretroviral regimens. The information of consequences when continuing this treatment has been limited.

Objective: To determine the rate, severity, and predictive factors of progression to anemia in HIV-infected patients with nonanemic macrocytosis.

Methods: A retrospective cohort study was conducted among HIV-infected patients receiving zidovudine-containing antiretroviral regimens with nonanemic macrocytosis. Macrocytosis was defined by a mean corpuscular volume (MCV) of >100 femtolitres. According to WHO, anemia was defined as hemoglobin levels <12.0 g/dL in women and <13.0 g/dL in men. Kaplan-Meier analysis was used to determine the probability of progression to anemia. Cox proportional hazard model was used to determine predictive factors of progression to anemia.

Results: Of 53 study patients, the mean age was 42.2 years and 60.4% was male. Median CD4 cell count at baseline was 85 cells/mm3. Macrocytosis was observed at a median of 1.5 years after receiving zidovudine-containing regimens. The median follow-up duration after development of macrocytosis was 5.8 years. Of all, 11 patients (20.8%) progressed to mild asymptomatic anemia. None of the patients required blood transfusion or discontinuation of zidovudine. From Kaplan-Meier analysis, the probability to develop anemia at 5 years was estimated at 9.4%. From Cox regression analysis, duration of zidovudine use (hazard ratio (HR) 1.141; 95% confidence interval (CI) 1.036 - 1.256; p = 0.007), CD4 count prior to start zidovudine (HR 0.991; 95% CI 0.982 - 0.999; p = 0.038), and hematocrit level while developing macrocytosis (HR 0.683; 95% CI 0.541 - 0.861; p = 0.001) were significant factors in predicting progression to anemia. Whereas, age, sex, body weight, history of opportunistic infection, co-trimoxazole prophylaxis, compositions of other antiretroviral drugs, MCV prior to start zidovudine, and duration of HIV infection were not associated with progression to anemia.

Conclusion: Nonanemic macrocytosis in HIV-infected patients receiving zidovudine can progress to anemia. Longer duration of zidovudine use, low CD4 count prior to zidovudine use, and hematocrit level while developing macrocytosis are predictive factors for progression to anemia.

Keywords: HIV, Nonanemic macrocytosis, Anemia, Zidovudine, Antiretroviral therapy