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Potential cause of HIV disease progression revealed: Brain derived neurotrophic factor and its immunoprotective role

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Abstract

Thrombocytopenia (TCP), a platelet count of less than 150,000 per microliter, is a common hematological complication which affects a sizable proportion of people living with HIV. Of concern, studies have demonstrated that TCP may play an intriguing role on HIV-1 disease progression. However, the mechanism mediating this association is uncertain, highlighting the need for further research. A total of 400 people living with HIV under clinical care underwent immune and laboratory assessments. Baseline and six month visits consist of a brief medical exam, survey questionnaires and a fasting blood sample, to assess general health, alcohol, immune status, and BDNF levels. The group was chosen to represent relatively "pure" alcohol users with minimal drug use, and without major confounding factors. Four hundred patients were included, with a median baseline platelet count of 234,000/mm3. The thrombocytopenia prevalence estimates in the PADS Cohort was 14%. The rates of thrombocytopenia were significantly higher in the heavy alcohol users, HAU versus the non HAU group (25% versus 15% versus 10%). As previously reported, TCP was correlated with changes in CD4 T-cell counts and plasma HIV RNA levels ($P < 0.001$ for both). Thrombocytopenia was associated with a reduction on BDNF (5037±3811 vs. 8830±6555). In multivariate analysis, history of thrombocytopenia: OR = 11.9 (2.4-57.9; P = 0.002), and low BDNF levels were predictors of poor viro-immune responses. Platelet counts were negatively affected by alcohol and were associated with deficits in BDNF leading to poor viro-immune improvements with antiretrovirals. These results could have important clinical and therapeutic implications.

Biography:

Maria Jose Miguez is a medical doctor with a Ph.D. in Immunology and extensive training in HIV and neuroimmunology. Professor Miguez is the Director of the Health Behavior and Policy Initiative, a research center that includes a tobacco and an alcohol/HIV centers funded by NIAAA and to James and Esther King Florida Program. She has published more than 80 papers in reputed journals.