

The relationship between plasma microparticles, protein S and anticardiolipin antibodies in patients with human immunodeficiency virus infection.

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The high prevalence of free protein S deficiency in human immunodeficiency virus (HIV)-infected patients is poorly understood. We studied 38 HIV seropositive patients. Free protein S antigen values assayed using the polyethylene-glycol precipitation technique (PEG-fS) were statistically lower in patients than in controls. These values using a specific monoclonal antibody-based ELISA (MoAb-fS) and the values of protein S activity (S-act) were not statistically different between patients and controls. C4b-binding protein values were not different from control values. In patients, PEG-fS values were lower than MoAb-fS values. Ten patients had a PEG-fS deficiency, 4 patients had a MoAb-fS deficiency and 8 had a S-act deficiency. Protein S activity and MoAb-fS were lower in clinical groups with poor prognosis and in patients with AIDS but PEG-fS was not. A trend for reduced S-act/MoAb-fS ratios was observed in patients. PEG-fS was negatively correlated with anticardiolipin antibody titers whereas MoAb-fS was not. The plasma of PEG-fS deficient HIV-patients contained high amounts of flow cytometry detectable microparticles which were depleted from plasma by PEG precipitation. The microparticles were partly CD42b and CD4 positive but CD8 negative. These micro-particles were labelled by an anti free protein S monoclonal antibody. The observed differences between MoAb-fS and PEG-fS values were correlated with the amount of detectable plasma microparticles, just like the differences between MoAb-fS and S-act. Plasma microparticles correlated with anticardiolipin antibody titers. In summary, free protein S antigen in HIV infected patients is underestimated when the PEG precipitation technique is used due to the presence of elevated levels of microparticles that bind protein S. The activity of free protein S is also impaired by high levels of microparticles. The prevalence of free protein S deficiency in HIV positive patients is lower than previously published (4/38, approximately 10%) and is correlated with poor prognosis. By implication, use of a PEG precipitation technique might give artefactually low free protein S antigen values in other patient groups if high numbers of microparticles are present. In HIV patients, high titers of anticardiolipin antibodies are associated with high concentrations of cell-derived plasma microparticles.