To the Editor:

Intercellular adhesion molecule 1 (ICAM-1) serves in intercellular adhesion by binding to its ligand, leukocyte integrins, lymphocyte function-associated antigen 1 (LFA-1) and to complement receptor type 3, which enables it to participate in many immunological functions. ICAM-1 expressed on the cells has an increased association with the cell activation and/or the production of various cytokines. In addition, the findings of increased levels of circulating ICAM-1 (cICAM-1) were reported in the serum of the patients with malignant as well as inflammatory diseases. However, the actual physiological function and/or property of ICAM-1 is not yet fully understood. Most et al. reported increased levels of cICAM-1 in 76 patients infected with human immunodeficiency virus type 1 (HIV-1), including 6 hemophiliacs, and correlated the close association of the increased levels of cICAM-1 with HIV-1 infection. They speculated that this could cause further deterioration of the disturbed immune function of these patients. However, they did not use HIV-1-negative hemophiliacs as the controls to the HIV-1-positive counterpart.
We have previously reported increased levels of serum adenosine deaminase 2 (ADA) and neopterin (NP) in hemophiliacs, irrespective of their HIV-1 status. Accordingly, we investigated whether or not cICAM-1 can be a marker of HIV-1 infection in hemophiliacs.

The subjects were 54 hemophiliacs, including 33 patients who were positive for HIV-1 antibody (22 asymptomatic carriers [AC], 5 patients with acquired immune deficiency syndrome [AIDS]-related complex [ARC], 6 patients with AIDS) who had not received antihemophilic factor concentrate for more than 5 days at the time of this study. Twenty healthy adults served as controls. Serum cICAM-1 was measured using a test kit (ICAM-1 test kit; T Cell Diagnostics, Cambridge, MA USA).

Mean (±SD) serum levels of cICAM-1 were higher in both HIV-1-positive (499 ± 182 ng/mL) and negative (458 ± 148 ng/mL) hemophiliacs than in healthy controls (280 ± 60 ng/mL) (P < .01) (Student's t-test) (Fig 1). There was no difference between HIV-1-positive and HIV-1-negative hemophiliacs, nor between AC, ARC, and AIDS patients. No correlation between CD4-lymphocyte count and ICAM-1 concentration was observed. Therefore, we confirmed that cICAM-1 is not a specific marker of HIV-1 infection in this clinical setting.

It seems possible that the increased levels of cICAM-1 in hemophiliacs, irrespective of their HIV-1 status, were caused by viruses other than HIV-1, such as the hepatitis B virus (HBV) and hepatitis C virus (HCV). Actually, 30% and 96% of our patients were positive for HBV antibody (HBV-antigen-negative) and HCV antibody, respectively. However, none had active liver disease at the time of this study, making this possibility unlikely. Another explanation is that the repeated infusion of antihemophilic factor concentrate caused nonspecific activation and/or suppression of the immune system, leading perhaps to an effect on the antiidiotype/idiotype network, to produce high cICAM-1, as in the case of ADA and NP. However, the clinical significance of the elevation of cICAM-1 in hemophiliacs, irrespective of their HIV-1 status, has yet to be clarified further.

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REFERENCES
Increased levels of serum intercellular adhesion molecule 1 in hemophiliacs irrespective of human immunodeficiency virus type 1 infection [letter]

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