

Abstract

Endothelin-1 is a recently identified cytokine with potent vasoconstrictor activity which is associated with various diseases involving blood vessels. HIV-1 related retinal microangiopathic syndrome is a frequent finding in patients with AIDS or AIDS-related complex, presenting predominantly with retinal cotton-wool spots. We investigated 55 HIV-1 infected patients by ophthalmoscopy and for endothelin-1 immunoreactivity in plasma and an additional 76 HIV-1 infected patients only for endothelin-1 levels. For reference values 13 age-matched healthy subjects were studied. In 18 of 55 patients (33%) investigated ophthalmoscopically we found evidence of microangiopathic syndrome. Overall, the mean endothelin-1 immunoreactivity in plasma of HIV-1 infected patients was significantly elevated as compared to controls (4.28 ± 3.62 versus 2.72 ± 0.67 fmol/ml, $P < 0.0001$). HIV-1 infected patients with retinal microangiopathic syndrome had significantly higher plasma levels of endothelin-1 immunoreactivity (4.59 ± 1.38 fmol/ml) compared to HIV-1 infected patients without microangiopathic syndrome (3.18 ± 1.64 fmol/ml, $P = 0.003$). Correlation analysis revealed that endothelin-1 immunoreactivity in plasma had no significant association with disease progression, CD4 cell count, beta 2-microglobulin, neopterin, or age. Endothelin-1 immunoreactivity in plasma was correlated exclusively with retinal microangiopathic syndrome in one or both eyes ($r = 0.45$, $P = 0.0006$) and with the number of cotton-wool spots ($r = 0.50$, $P = 0.0001$). In conclusion, HIV-1 related retinal microangiopathic syndrome is associated with elevated plasma levels of endothelin-1. By virtue of its potent vasoconstrictor activity endothelin-1 may be involved in the pathogenesis of HIV-1 related vascular disease.