Hyperphosphorylated tau in cerebrospinal fluid: A biomarker for neurological aging in HIV-1?

Abstract #453

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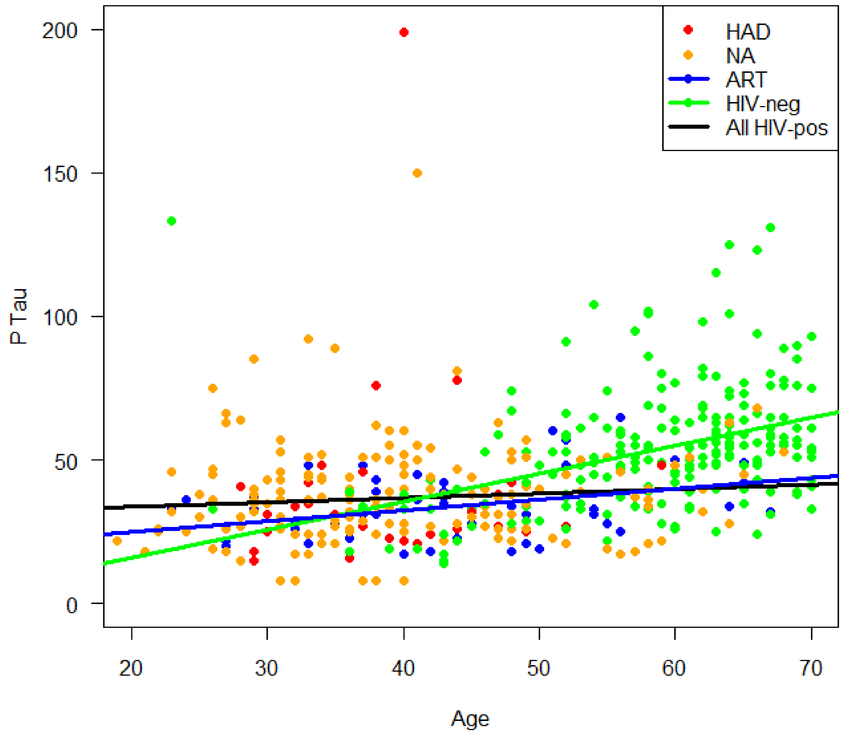
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Background

With widespread use of combined antiretroviral treatment (cART), overt HIV-1 associated dementia (HAD) has become rare in the developed world where its incidence is largely confined to 'late presenters'. However, milder forms of HIV-associated neurocognitive disorders (HAND) remain frequent, including in patients treated with cART. Hyperphosphorylated tau in CSF (p-tau) is an established biomarker in diagnosis of Alzheimer disease. It increases with age also in healthy subjects and appears not to be influenced by neuroinflammation. In this study examined whether p-tau can be used as a marker of neurological aging in HIV patients.

Method

In a cross-sectional retrospective study, CSF concentrations of p-tau (phosphorylated at threonine 181) were measured with an enzyme-linked immunoassay in: HIV-1 infected neuroasymptomatic patients without treatment (NA) (n=172); HIV-infected patients on cART with plasma HIV-RNA <50 copies/mL (n=68); HAD (n=33) and HIV-negative controls (n=291). For statistical measures, correlations and linear regression were used.



Results

The cART group and HIV-negative controls showed significant positive correlations of p-tau and age ($p<0.01$ and $p<0.001$ respectively), whereas no significant correlations were found in the NA and HAD groups. When looking at the HIV-positive population as a whole, a significant difference was seen in slope compared to controls ($p<0.001$).

Conclusions

- Patients with HAD do not have higher p-tau levels than asymptomatic subjects without cART.
- Several untreated HIV-infected subjects, both asymptomatic and with HAD, had increased CSF concentrations of p-tau.
- HIV-negative controls and HIV-infected on cART show significant increases of p-tau with age. No such connection could be found in untreated HIV. The mechanism behind this skewness remains to be explained.

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