

AGING-RELATED PLASMA BIOMARKER CHANGES IN COGNITIVELY NORMAL ADULTS: POPULATION-BASED STUDY IN RURAL XI'AN, CHINA

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Background

- Plasma biomarkers have been recommended for Alzheimer's disease (AD) diagnosis. However, the age-dependent trajectories and potential nonlinear associations between age and plasma biomarkers remain incompletely characterized among cognitively normal adults.

Methods

- This was a population based cross-sectional study, and 780 cognitively normal adults aged 40 years or older were enrolled. The mean age was 58.14 ± 9.05 years (range: 40-85 years), with 305 men (39.0%).
- Plasma levels of phosphorylated tau 217 (p-tau217), phosphorylated tau 181 (p-tau181), amyloid- β 42/40 ratio ($A\beta$ 42/40), glial fibrillary acidic protein (GFAP), and neurofilament light chain (NfL) were quantified using electrochemiluminescence assays.
- Correlation analyses and multivariable linear regression models were used to investigate the relationship between age and plasma biomarkers, with full adjustment for demographic, genetic, clinical and metabolic covariates.

Results

- GFAP, NfL, p-tau181 and p-tau217 rose steadily with age, while $A\beta$ 42/40 declined. Pearson analyses showed age positively correlated with p-tau217 ($p=0.145$), p-tau181 ($p=0.190$), GFAP ($p=0.496$) and NfL ($p=0.593$), and negatively correlated with $A\beta$ 42/40 ($p=-0.157$; all $P<0.001$). After full adjustment, age independently predicted elevated GFAP, NfL, p-tau181, p-tau217 and reduced $A\beta$ 42/40 (all $P<0.05$). RCS detected no nonlinear age-biomarker links (all $P_{\text{nonlinear}} > 0.05$), supporting purely linear associations across ages 40–85.

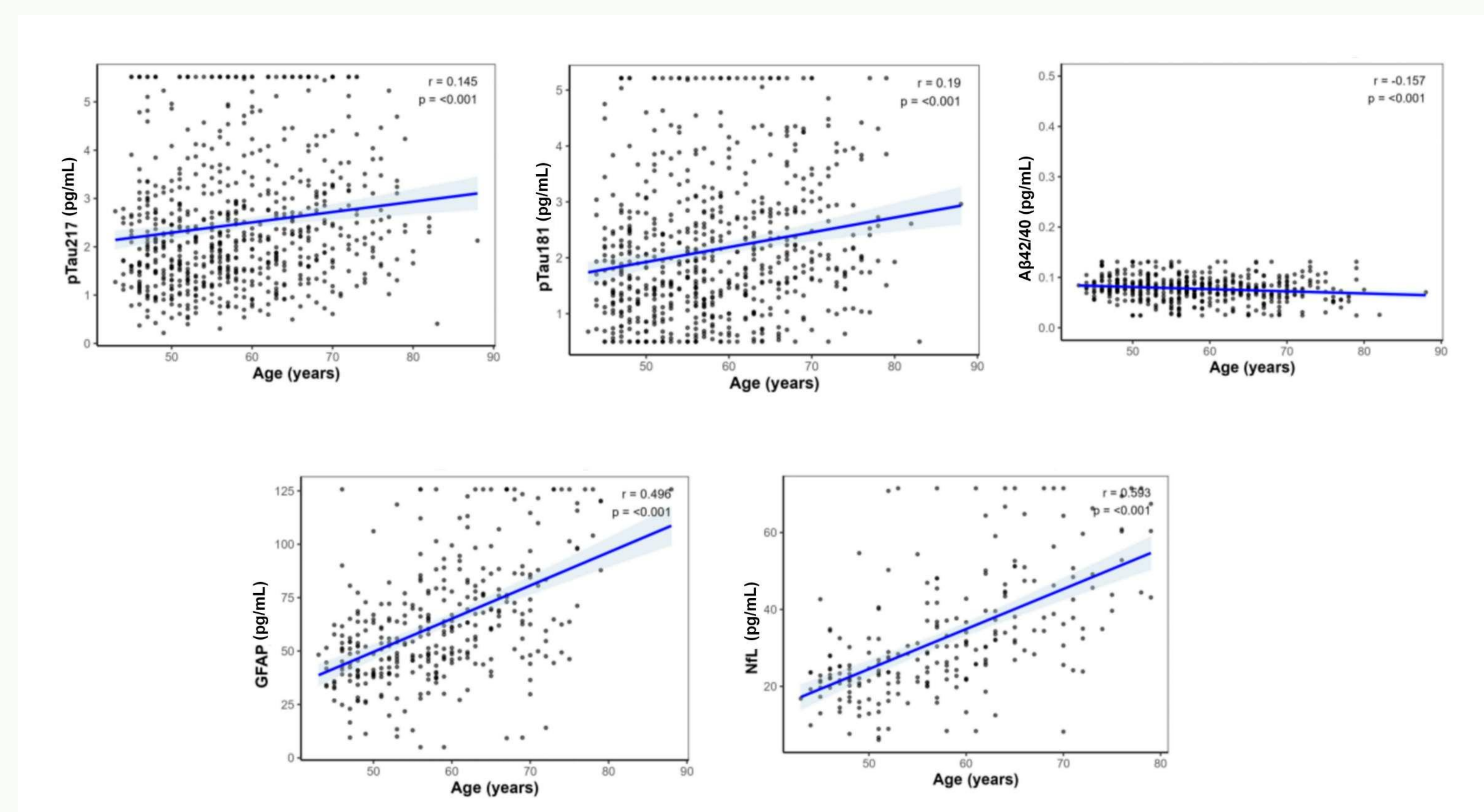


Figure. Linear correlations between age and plasma AD biomarkers

Conclusion

- Plasma levels of p-tau181, p-tau217, GFAP, NfL increase with aging, while $A\beta$ 42/40 decrease with aging significantly. These indicated that plasma biomarkers levels associated with aging strongly. It may be necessary to determine an age-specific cutoff value of plasma biomarkers in AD diagnosis.