

COGNITIVE FUNCTION AND PLASMA BIOMARKERS DYNAMICS IN ALZHEIMER'S DISEASE DURING LECANEMAB TREATMENT: A REAL-WORLD CLINICAL STUDY

Yujie Lai¹, Nan Wu¹, Rongchang Zhao¹, Qinghua Wang¹, Yanjiang Wang^{1,*}
1Daping Hospital, Third Military Medical University - Chongqing (China)

Background

- Although lecanemab has shown promise for early-stage AD in China, cognitive decline and tau pathology may progress in some patients even after A β clearance.
- Non-invasive plasma biomarkers are essential for serial monitoring of treatment effects and disease status.
- The present study evaluated lecanemab efficacy, as well as time-related changes in cognitive function and plasma biomarkers.

Methods

- Study Design:** A single-arm, real-world study with an external comparator (Chongqing Ageing & Dementia Study [CADS] cohort).
- Participants:** 30 participants with AD confirmed by A β -PET.
- Intervention:** Lecanemab administered via intravenous infusion every 2 weeks.
- Assessments:** Cognitive assessments and plasma biomarker evaluations were conducted at 12 and 18 months during lecanemab treatment.

Results

- Compared with the CADS cohort, lecanemab attenuated cognitive decline.**
 - After 12 months of treatment, significant reductions from baseline were observed in plasma pTau181, pTau217, pTau231, and GFAP (all $P < 0.001$), alongside an elevated A β 42/A β 40 ratio and NfL levels ($P < 0.01$), whereas pTau205 remained unchanged ($P = 0.107$).

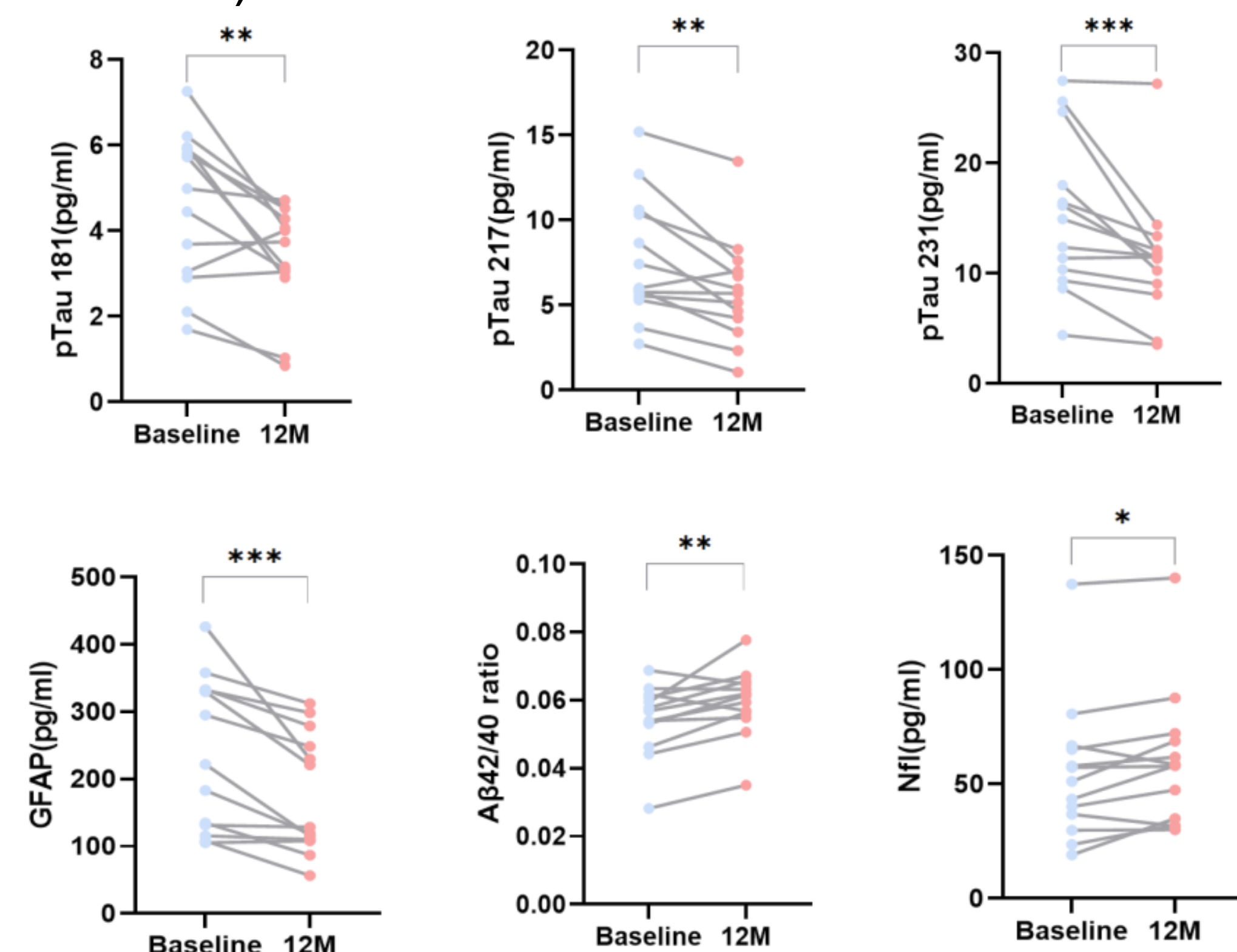


Fig.1 Plasma biomarker levels at baseline vs 12 months

Results

- Plasma biomarkers exhibited distinct time-dependent patterns during the 18-month follow-up period.**
- Several phosphorylated tau species and GFAP declined significantly over time, with pTau231 showing a mean monthly reduction of 0.2861 pg/mL ($P < 0.001$), followed by pTau217 (0.1249 pg/mL, $P < 0.001$), pTau181 (0.0921 pg/mL, $P < 0.001$), and pTau205 (0.0143 pg/mL, $P = 0.048$). GFAP also decreased markedly, with an average monthly reduction of 3.7999 pg/mL ($P = 0.002$).
- A β 42 and the A β 42/A β 40 ratio increased monthly by 0.0716 pg/mL ($P < 0.001$) and 0.0004 ($P < 0.001$), respectively, while A β 40 ($P = 0.136$) and NfL ($P = 0.940$) levels remained stable.

Table 1 Mean monthly changes in plasma biomarkers.

Biomarker	Mean monthly change	P-value	Trend
pTau231	-0.2861 pg/mL	<0.001	Decline
pTau217	-0.1249 pg/mL	<0.001	Decline
pTau181	-0.0921 pg/mL	<0.001	Decline
pTau205	-0.0143 pg/mL	0.048	Decline
GFAP	-3.7999 pg/mL	0.002	Decline
A β 42	+0.0716 pg/mL	<0.001	Rise
A β 42/A β 40 ratio	+0.0004	<0.001	Rise
A β 40	—	0.136	Stable
NfL	—	0.940	Stable

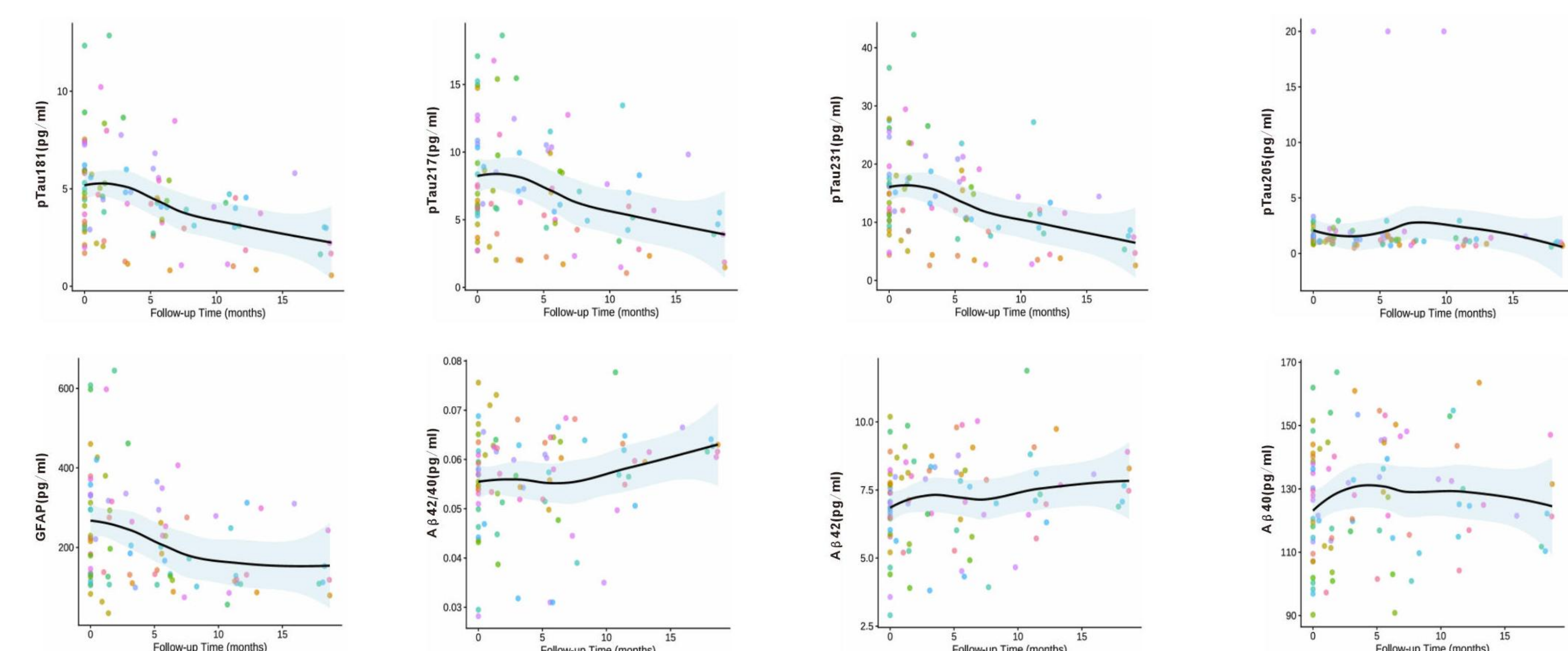


Fig.2 Plasma biomarker trajectories over time.

Conclusion

- Lecanemab showed potential efficacy in reducing cognitive decline and robust improvements in blood biomarkers.