

Trajectory of Glial Fibrillary Acidic Protein (GFAP) in the 13 years preceding dementia in the general population: results from the Three-City study. P3-14

Audrey Pimenta de Miranda^a; Morgane Linard^a, MD-PhD; Emanuela Martinuzzi^b, PhD;
Jean-François Dartigues^a, MD-PhD; Nicolas Glaichenhaus^b, PhD;
Cécilia Samieri^{a*}, PhD; Catherine Helmer^{a, c*}, MD-PhD.

^a University of Bordeaux, INSERM, Bordeaux Population Health Research Center, UMR 1219, Bordeaux, France.
^b University Côte d'Azur, CNRS, INSERM, Institut de Pharmacologie Moléculaire et Cellulaire, 06560 Valbonne, France.
^c Clinical and Epidemiological Research Unit, INSERM CIC1401, F-33000 Bordeaux, France.
Contact: audrey.pimenta-de-miranda@u-bordeaux.fr

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Context

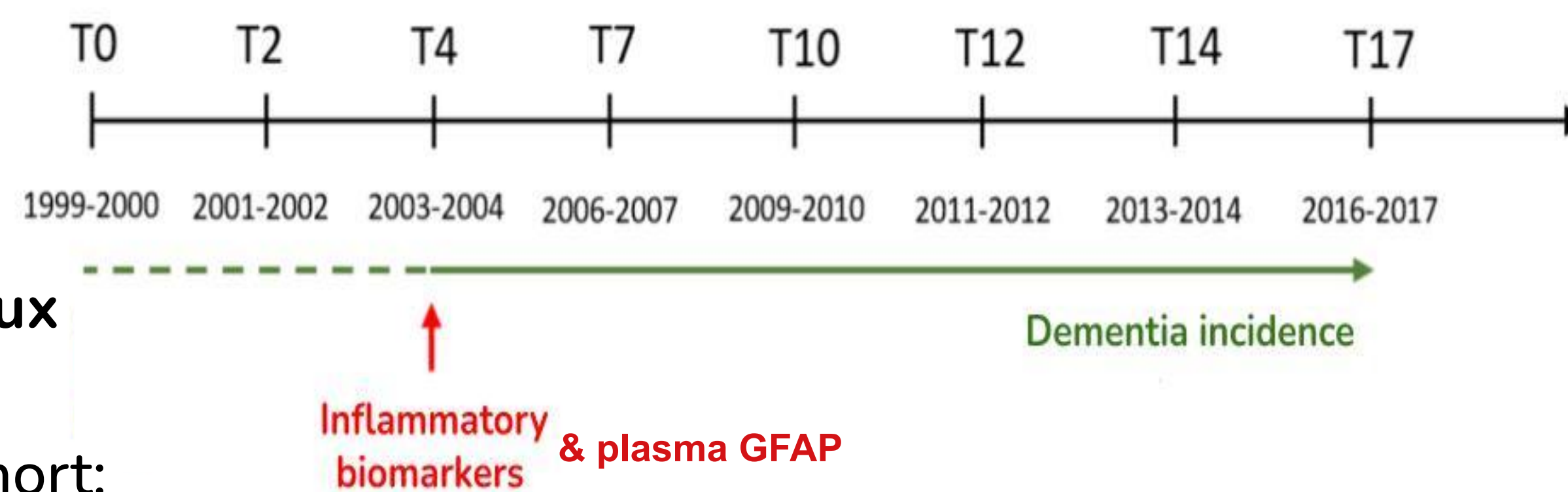
Glial Fibrillary Acidic Protein (GFAP) is a biomarker of reactive astrogliosis and neuroinflammation, which plays an important role in the pathophysiology of dementia. Yet, the dynamics of reactive astrogliosis and GFAP during prodromal stages of dementia remains unclear.

Bellaver et al. 2021, Neurology; Pelksman et al. 2024, Alz & Dem; Kumar et al. 2023, J Neurochem

Objective: to model GFAP trajectories in the years preceding dementia diagnosis in a population-based cohort

Methods

Study population



3-City study, Bordeaux

→ n=2,104

Population-based cohort:

inclusion of 65+ older adults followed-up over 17 years for dementia.

GFAP level & risk of dementia: *main study sample*

- association between plasma GFAP and dementia risk during 13 years of follow-up
- multivariable adjusted Cox model

GFAP trajectories in prodromal dementia: *nested case-control sample*

Incidence density sampling: each case matched to up to 4 controls at diagnosis visit on age, sex, education.

→ multiple linear regression to compare the evolution of GFAP between cases and controls in the prodromal phase of dementia

Conclusion

Among low to moderate concentrations, plasma GFAP was already higher among cases up to 13 years before dementia diagnosis compared to controls, suggesting trajectories may differentiate earlier in life, and GFAP could thus be an early disease biomarker. At highest concentrations, the opposite pattern could reflect the decline in reactive astrogliosis dynamics during prodromal dementia.

Results

GFAP level & risk of dementia (n=984)



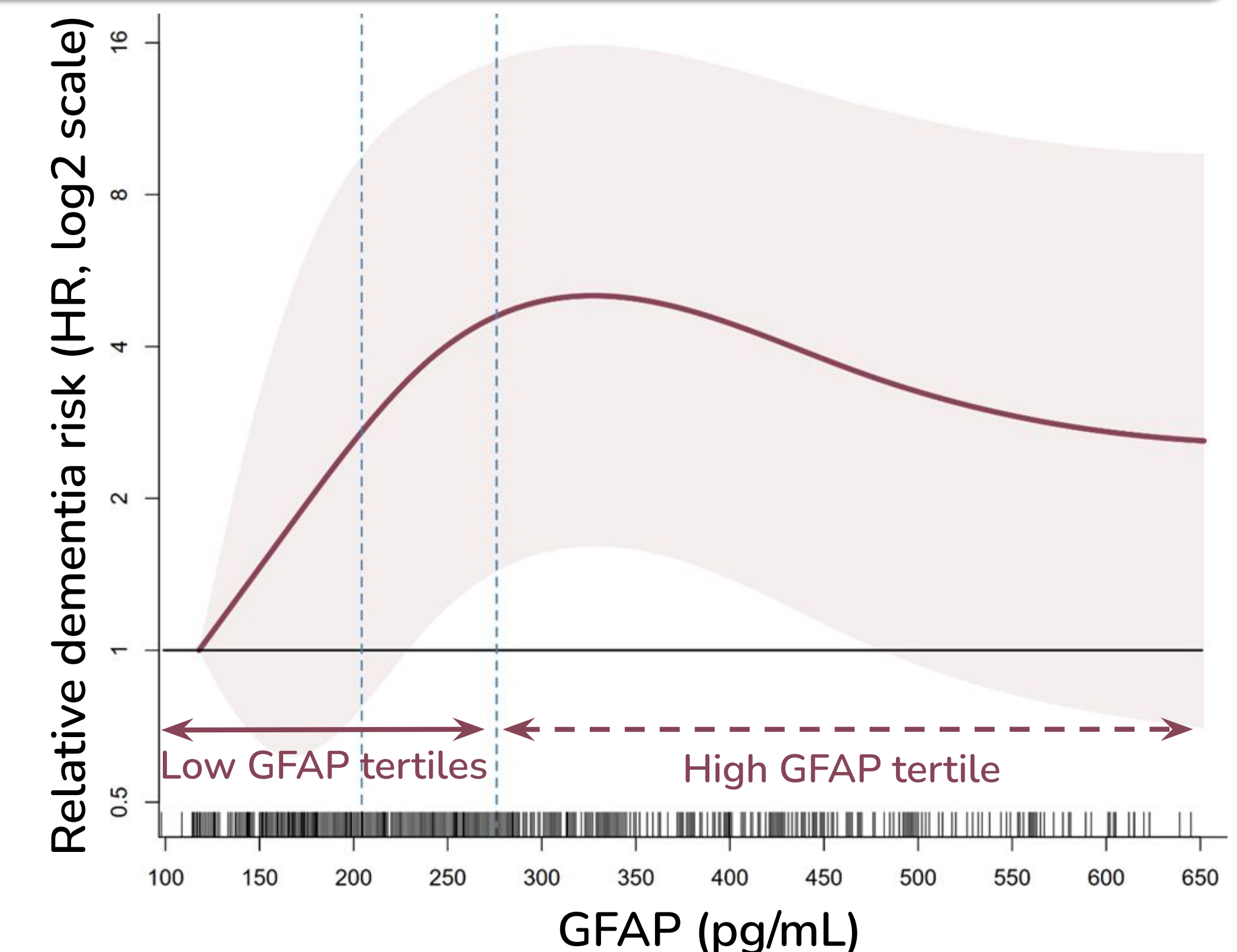
64% women

Mean age: 77.6 y (4.7)

18% APOE ϵ 4

Median GFAP: 238.5 pg/mL
(191.0–316.5)

Non-linear relationship between GFAP and dementia risk: higher GFAP levels are associated with increased risk of dementia in the two lowest tertiles.



GFAP trajectories before dementia (282 cases & 1048 controls)

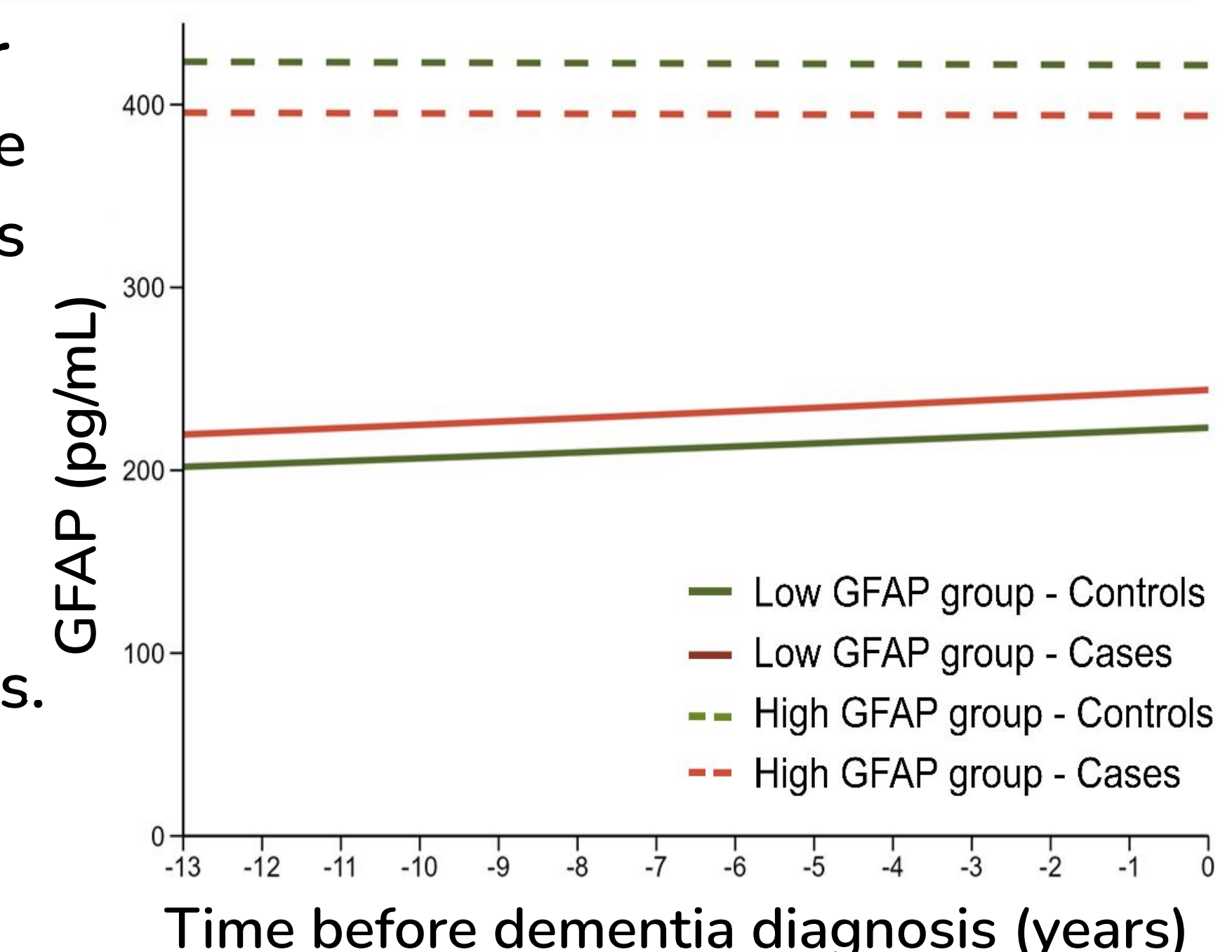
GFAP level evolution did not differ between cases and controls during the 13 years before dementia diagnosis (mean follow-up: 6.6 years).

In the low GFAP group:

Levels increased over time for both controls and cases. Cases had consistently higher levels than controls.

In the high GFAP group:

Levels remained stable over time and controls showed consistently higher levels than cases.



Representation for the mean profile : 76 years old women with secondary school education. Stratified by GFAP level (low GFAP group = tertile 1 and 2 ; high GFAP group = tertile 3, cut-off at 286 pg/mL).