March 23, 2026

Sysmex Corporation

【Overview presentation】

International Conference on Alzheimer's and Parkinson's Diseases and Related Neurological Disorders: AD/PD™ 2026

Blood-based prediction of CSF amyloid pathology using plasma p-Tau217 and p-tau217/Aβ42 ratio in the SPIN cohort

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Overview presentation	**Background and Objectives:** Blood-based biomarkers for predicting brain amyloid status are increasingly valuable for Alzheimer's disease (AD) screening. Plasma phosphorylated tau at threonine 217 (p-Tau217) has emerged as a highly promising marker. This study aimed to evaluate the performance of plasma p-Tau217 and the p-Tau217/Aβ42 ratio, measured using the automated immunoassay HISCL™-5000 (Sysmex), in predicting Aβ pathology defined by CSF Aβ42/40 ratio in the SPIN cohort. **Methods:** We analyzed 199 participants enrolled at Hospital de la Santa Creu i Sant Pau between 2013 and 2022: 50 cognitively unimpaired, 49 MCI due to AD, 49 MCI non-AD, and 51 AD dementia. CSF Aβ42/40 ratio was measured by Lumipulse (Fujirebio-Europe), while plasma p-Tau217 and Aβ42 were quantified using HISCL-5000. **Results:** Plasma p-Tau217 and p-Tau217/Aβ42 ratio predicted Aβ pathology with AUROC values of 0.947 (95% CI: 0.911–0.982) and 0.954 (95% CI: 0.920–0.987), respectively. Optimal thresholds were 0.176 for p-Tau217 and 0.010 for the ratio, yielding sensitivity and specificity around 92%. A two-threshold approach achieved >95% sensitivity, specificity and >94% accuracy with 21–23% intermediate zone, improving classification confidence.

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	Conclusions: Plasma p-Tau217 and p-Tau217/Aβ42 ratio measured by automated immunoassay demonstrated excellent accuracy (>90%) for predicting Aβ pathology defined by CSF testing. These findings support their potential as reliable, minimally invasive tools for AD screening and clinical decision-making.
Session	Theme A: β-Amyloid Diseases / A04.g. Imaging, Biomarkers, Diagnostics: CSF- and blood-based biomarkers (SHIFT 02-365)

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