

EVALUATING THE DIAGNOSTIC PERFORMANCE OF PLASMA BIOMARKERS FOR ALZHEIMER'S DISEASE AND VASCULAR COGNITIVE IMPAIRMENT IN NORTHWESTERN CHINA

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Background

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It remains challenging in differential diagnosis between Alzheimer's disease (AD) and vascular cognitive impairment (VCI) in some clinical cases; therefore, we aim to evaluate the diagnostic performance of six plasma biomarkers for AD and VCI in real-world memory clinic in Northwestern China.

Methods

Methods

The participants were enrolled in Tertiary and secondary hospitals in five provinces in Northwestern China from May 2025 to June 2026. Our population comprises Han ethnicity and other diversity minorities. Plasma biomarkers, including amyloid- β 42 ($A\beta$ 42), $A\beta$ 40, p-tau181, p-tau217, GFAP and NfL were simultaneously measured using Acridinium Ester Chemiluminescence (AECL) method. The area under the receiver operating characteristic curve (AUC) was applied to assess the performance of single and composite plasma biomarkers respectively.

Results

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◆ A total of 1303 participants were enrolled, including 163 AD patients, 269 with VCI and 998 healthy controls.

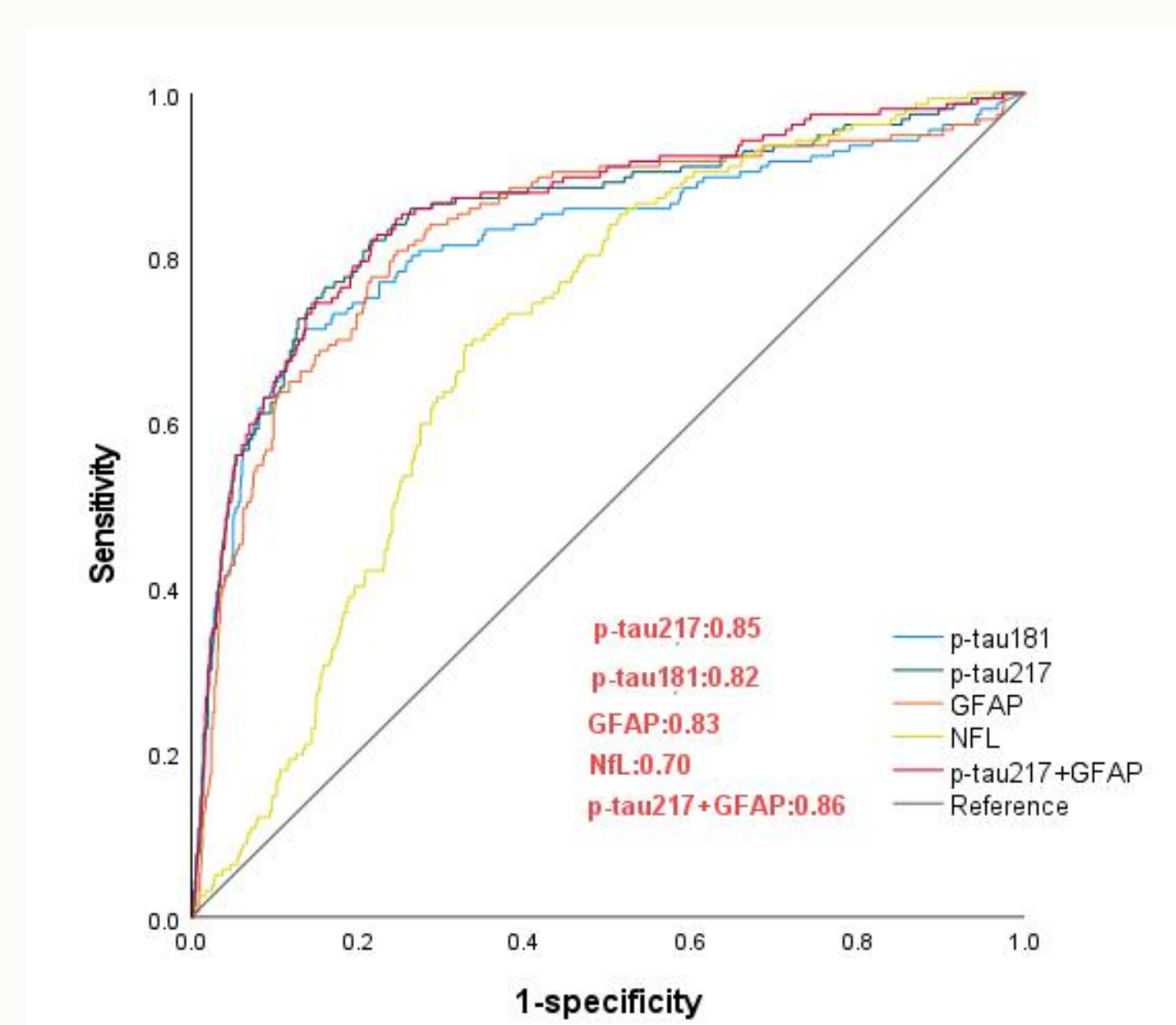


Fig 1. Diagnostic performance of plasma biomarkers in AD patients vs. control.

◆ Plasma p-tau217, p-tau181 and GFAP were effective in diagnosing AD (respective AUC=0.85, 0.82 and 0.83), and composite plasma biomarkers including p-tau217 and GFAP presented slightly better performance with AUC of 0.86.

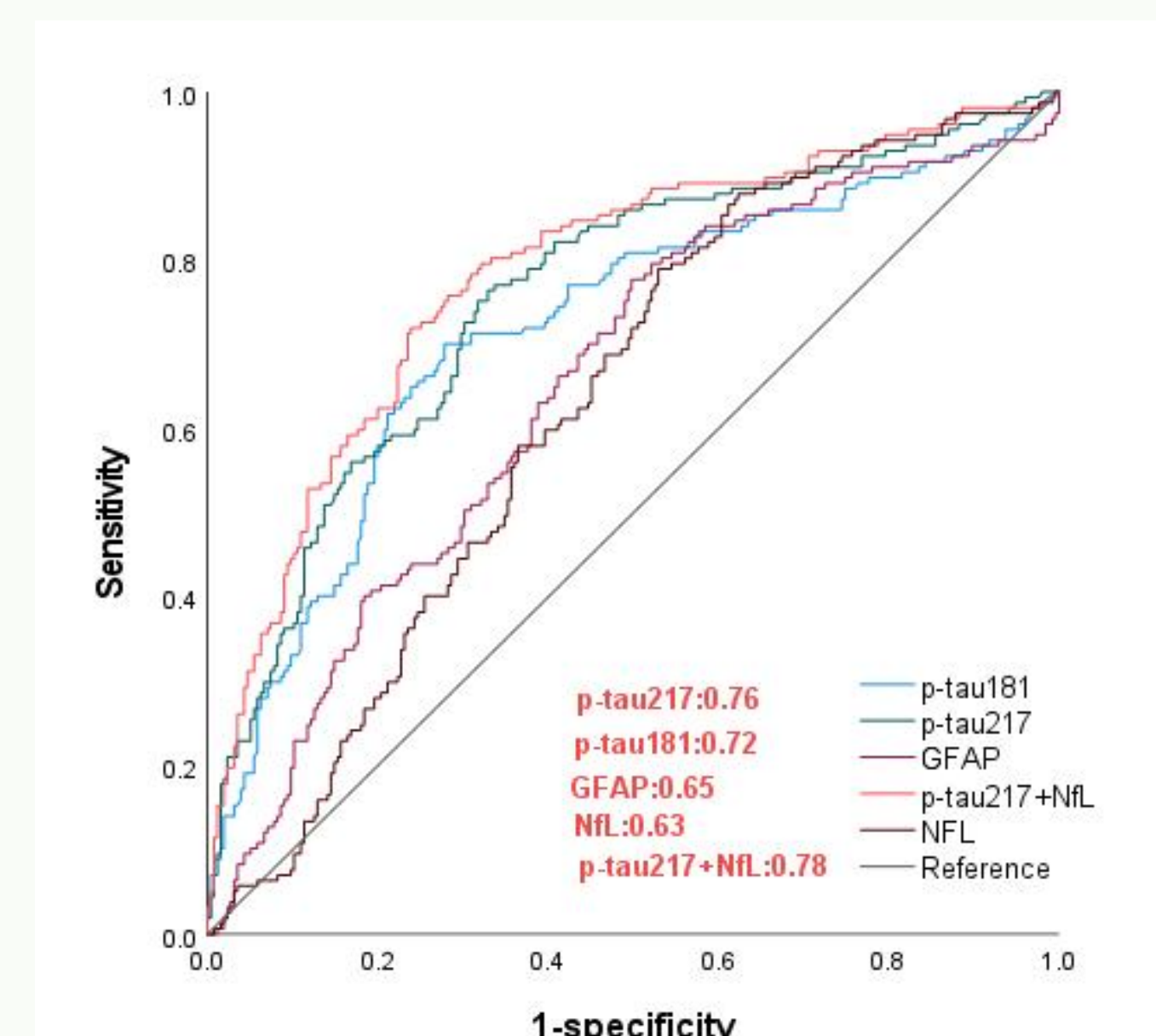


Fig 2. Diagnostic performance of plasma biomarkers in AD patients vs. VCI.

◆ Plasma p-tau217 and p-tau181 showed moderate diagnostic efficacy in distinguishing AD from VCI (AUC= 0.76 and 0.72), and the composite indicators of plasma p-tau217 and NfL slightly improved the diagnostic performance (AUC= 0.78).

Conclusion

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This study validated that plasma p-tau217, GFAP, and p-tau181 were effective in AD diagnosis especially when they were combined, while the biomarkers showed limited value for differential diagnosis of AD from VCI. The diagnostic performance of plasma biomarkers still needs to be further explored in larger sample size.