ALTERNATION IN PLASMA BETA-AMYLOID LEVELS AFTER GLUCOSE LOADING COULD BE A NOVEL DIAGNOSTIC MARKER FOR ALZHEIMER DISEASE

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Introduction & aims: With the emergence of a promising approach to treat Alzheimer disease (AD) targeting the β-amyloid (Aβ) pathway, it is necessary to establish new diagnostic biomarkers that enable the antemortem diagnosis of AD. Although plasma Aβ has been suggested as a non-invasive biomarker, its significance has been inconclusive. Thus, it is important to improve the diagnostic potential of plasma Aβ. One of the potential approaches is to modify plasma Aβ level using various modulators. In this study, we evaluated the influence of glucometabolic status on plasma Aβ level in AD transgenic mouse and AD patients.

Methods: We measured plasma Aβ levels in fed and fasted states in two lines of APP-Tg mice (APP/PS1 and APP23 mouse), and also examined the change in plasma Aβ levels during i.p. glucose tolerance test (2g/kg). Furthermore, we assessed the change in plasma Aβ levels during oral glucose tolerance test in AD and non-AD patients.

Results: Interestingly, plasma Aβ level in a fed state was significantly higher than that in a fasted state in both APP-Tg mice. Furthermore, plasma Aβ level rapidly increased after glucose loading. More importantly, the magnitude of the increase in plasma Aβ was significantly larger in APP-Tg mice than in wild-type littermates. Similarly, AD patients showed a unique pattern of plasma Aβ change during oral glucose tolerance test.

Conclusions: These findings might provide a novel diagnostic tool for AD using the elevation of plasma Aβ level after glucose loading.