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Lower CSF Amyloid Level is Associated with Sooner Anti-Psychotic Use in Alzheimer Disease: A Survival Analysis

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Background

Behavioral and psychological symptoms of dementia (BPSD) are a common features of Alzheimer disease (AD). Antipsychotics (AP) are a common BPSD treatment and may serve as a proxy for BPSD in retrospective studies. Potential associations between CSF markers of Alzheimer disease and future antipsychotic use have not been explored. Here we used a survival analysis approach to probe the relationship between CSF AD biomarkers and BPSD by looking at AP use.

Methods

A retrospective cohort of 86 patients(average 72 y/o +/-5, 46.5 %M) over the age of 65 with AD confirmed on CSF testing between December 2010 and March 2018 and no premorbid primary psychiatric diagnosis was identified using Northwestern Memorial Hospital's Enterprise Data Warehouse. Patients were stratified by levels of amyloid-Beta 42(AB42), phosphorylated tau, total tau, and amyloid to tau index(ATI) with a median split. We looked at time-to-AP use for each group using a Kaplan-Meier analysis. A log rank test was used to calculate statistical significance. Chi-square was used to compare nominal and Mann-Whitney U for quantitative features of each group.

Results

Altogether 11 patients received APs following CSF testing. There was no difference in AP use if groups were stratified by total tau, phosphorylated tau, or ATI. Nine (20.0%) of patients in the lower AB42 group compared with only 2 (4.5%) in the higher AB42 group received an AP. Patients in the lower AB42 group had sooner time-to-AP use on Kaplan-Meier analysis, confirmed with a log-rank test (p=0.04). Comparing the two groups of 43 patients stratified by AB42 level, we did

not detect a significant difference in demographics, MMSE scores, AD specific medication use, and comorbidities by the Charlson Comorbidity Index.

Conclusion

These results suggest a relationship between lower CSF amyloid levels and sooner AP use. This study supports prior work showing a relationship between amyloid deposition on PET imaging and neuropsychiatric symptoms. CSF AB42 may be important in developing a biological framework of neuropsychiatric symptoms in Alzheimer dementia and may help with BPSD prognostication.

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