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**Oral Conditions and Alzheimer's Disease: Neuropsychological Evaluations and PET Study**

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**Objectives** Worsening the oral conditions, including tooth loss and periodontal disease have been suggested as factors predisposing to the development of dementia in the past cohort studies. However, the association between the oral environment and Alzheimer's disease (AD) pathogenesis in humans remains equivocal. We aimed to investigate the associations of oral conditions and neuropsychological evaluations, amyloid- $\beta$  (A $\beta$ ) and tau pathologies in human participants.

**Methods** We examined occlusal force, the number of remaining teeth and the biofilm-gingival interface (BGI) index in 24 AD-spectrum patients and 19 age-matched healthy controls (HCs). They also underwent a battery of neuropsychological evaluations, positron emission tomography (PET) imaging of A $\beta$  and tau with specific radiotracers, <sup>11</sup>C-PiB and Florzolotau (18F) (<sup>18</sup>F-PM-PBB3), respectively. All AD-spectrum patients were A $\beta$ -positive, and all HCs were A $\beta$ -negative. We analyzed the correlations between the data of oral conditions and them.

**Results** Occlusal force showed a significant correlation with the score in Trail Making Test ( $p < 0.01$ ) whereas did not correlated with the ones in the Mini-Mental State Examination or Frontal Assessment Battery. The number of remaining teeth and the BGI index showed no correlation with <sup>11</sup>C-PiB retentions in amyloid PET in either group. In AD-spectrum patients, Florzolotau (18F) retentions in tau PET negatively correlated with the remaining teeth and revealed the correlation of tau deposits in the locus coeruleus ( $p < 0.05$ ) primarily with the hippocampal and neighboring areas. The tau deposition in none of the brain regions was associated with the periodontal status.

**Conclusions** This study suggested that occlusal force was correlated with working memory, and the number of remaining teeth associated with AD tau pathogenesis. Oral care may be useful to deceleration AD progression.