Serum albumin and beta-amyloid deposition in the human brain

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Study objective
This study examined the relationship between serum albumin levels and neurodegenerative changes in the brain in older adults without dementia: in vivo cerebral amyloid-β (Aβ) deposition, neurodegeneration of Alzheimer’s disease (AD)-signature regions, and cerebral white matter hyperintensities (WMH).

What is known and what this paper adds
Serum albumin binds 90%–95% of the Aβ in plasma. This investigation’s results confirm an association between low serum albumin levels and Aβ deposition in dementia-free adults.

Participants and setting
These analyses included 396 older adults without dementia (56.06% female; mean age, 70.48 ± 8.04 years; 112 with mild cognitive impairment, 284 cognitively normal) who participated in the Korean Brain Aging Study for Early Diagnosis and Prediction of AD (KBASE).

Design, size, and duration
Participants underwent comprehensive clinical assessments, measurement of serum albumin level, and multimodal brain imaging including [11C] Pittsburgh compound B-positron emission tomography (PET), [18F] fluorodeoxyglucose (FDG)-PET, and MRI. Serum albumin was categorized as follows: <4.4 g/dL (low albumin), 4.4–4.5 g/dL (middle albumin), and >4.5 g/dL (high albumin: used as a reference category). Aβ-positivity was considered as having elevated Aβ deposition in the frontal, lateral parietal, precuneus/posterior cingulate, or lateral temporal regions. Multiple linear regression models were used for the analysis.

Primary outcome measures
The primary outcome measures were Aβ positivity, AD-signature region cerebral glucose metabolism (AD-CM), AD-signature region cortical thickness (AD-CT), and WMH volume.

Main results and the role of chance
Serum albumin level (as a continuous variable) was inversely associated with Aβ deposition and Aβ positivity. The low albumin group had higher Aβ positivity than the high albumin group (OR 3.40; 95% CI, 1.67 to 6.92) but not than the middle albumin group (OR 1.74; 95% CI, 0.80 to 3.77). Neither serum albumin level nor albumin categories were related with AD-CM, AD-CT, or WMH volume.

Bias, confounding, and other reasons for caution
The present study’s cross-sectional nature precluded the establishment of causal relationships.

Study funding/potential competing interests
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A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The corresponding author(s) of the full-length article and the journal editors edited and approved the final version.
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