Inflammatory Biomarkers in the Texas Alzheimer’s Research Consortium (TARC) Cohort

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Background

- AD has been linked to a state of local and systemic inflammation and altered expression of both pro- and anti-inflammatory markers.
- Prospective studies show an increased AD risk associated with inflammatory proteins in serum.
- A heightened inflammatory state may mediate the relationship between prevalent cardiovascular disease (CVD) and AD.

Hypotheses

- TARC participants with probable AD will have a significantly different inflammatory profile than non-demented controls.
- Prevalent CVD will account for some of the relationship between case-control status and inflammatory marker profile.

Methods

- Participants were 197 AD cases and 198 normal controls enrolled in the TARC cohort and examined using standardized procedures.
- Diagnosis of AD status was based on NINCDS-ADRDA criteria and controls performed within normal limits on psychometric assessment.

Results

- Cases were older and had lower BMI (see Table 1).
- CVDE prevalence was similar in the two groups.
- Three inflammatory markers were significantly (unadjusted and adjusted) lower in cases than controls: IL-1ra, IFN-gamma, and CRP.

Conclusion

- Inflammatory biomarkers are not elevated in established AD cases relative to healthy controls.
- Inflammatory profiles are characterized by lower levels of some inflammatory markers in AD cases.
- CVD and its risk factors did not influence the inflammatory profile of either group.
- Although we adjusted for BMI, the reduced inflammatory markers in AD cases could be related to mechanisms that lead to weight loss in AD.

Table 1. Characteristics of Cases and Controls

| Biomarker          | AD Cases (n=197) | Controls (n=198) | P
|--------------------|------------------|------------------|---
| IL-1ra (pg/mL)     | 109.3(81.1)      | 134.9(75.6)      | <.001
| IL-10 (pg/mL)      | Below detectable limits | Below detectable limits | ---
| C Reactive Protein (mg/L) | 3.23 (4.87) | 3.68 (4.14) | .32
| TNF-alpha (pg/mL)  | 4.74 (3.60)      | 6.33 (5.44)      | .001

Note: P-values for all CVDE biomarker interaction terms > .05.