

ARIA-E Lesion Topography in Real-World ARIA Monitoring data from 4 US Sites

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Introduction

As anti-amyloid therapies become available in the clinic, it is important to better understand the phenomenon known as amyloid related imaging abnormality (ARIA). While studies consistently demonstrate that ARIA disproportionately affects the posterior lobes, the exact etiologic mechanisms underlying this regional susceptibility are not yet fully resolved. We investigated the spatial distribution of ARIA-E across the brain using real-world evidence (RWE) from 4 US sites (including non-academic centers) collected from January through December 2025.

Methods

- FLAIR MRI data from 81 ARIA-E positive patients, with a median of 3 ARIA assessments (1 to 10 per patient), were processed with a proprietary analysis (icobrain aria).
- For each patient, we extracted the maximum ARIA-E lesion volume observed during ARIA monitoring for 10 brain regions and analyzed its distribution with and without controlling for region volume: bilateral frontal, temporal, parietal, and occipital cortices, cerebellum, and remaining regions.
- In a second analysis we co-registered the selected sample of ARIA-E positive patients to a reference MNI template and calculated the voxel wise-overlap of ARIA-E lesions.

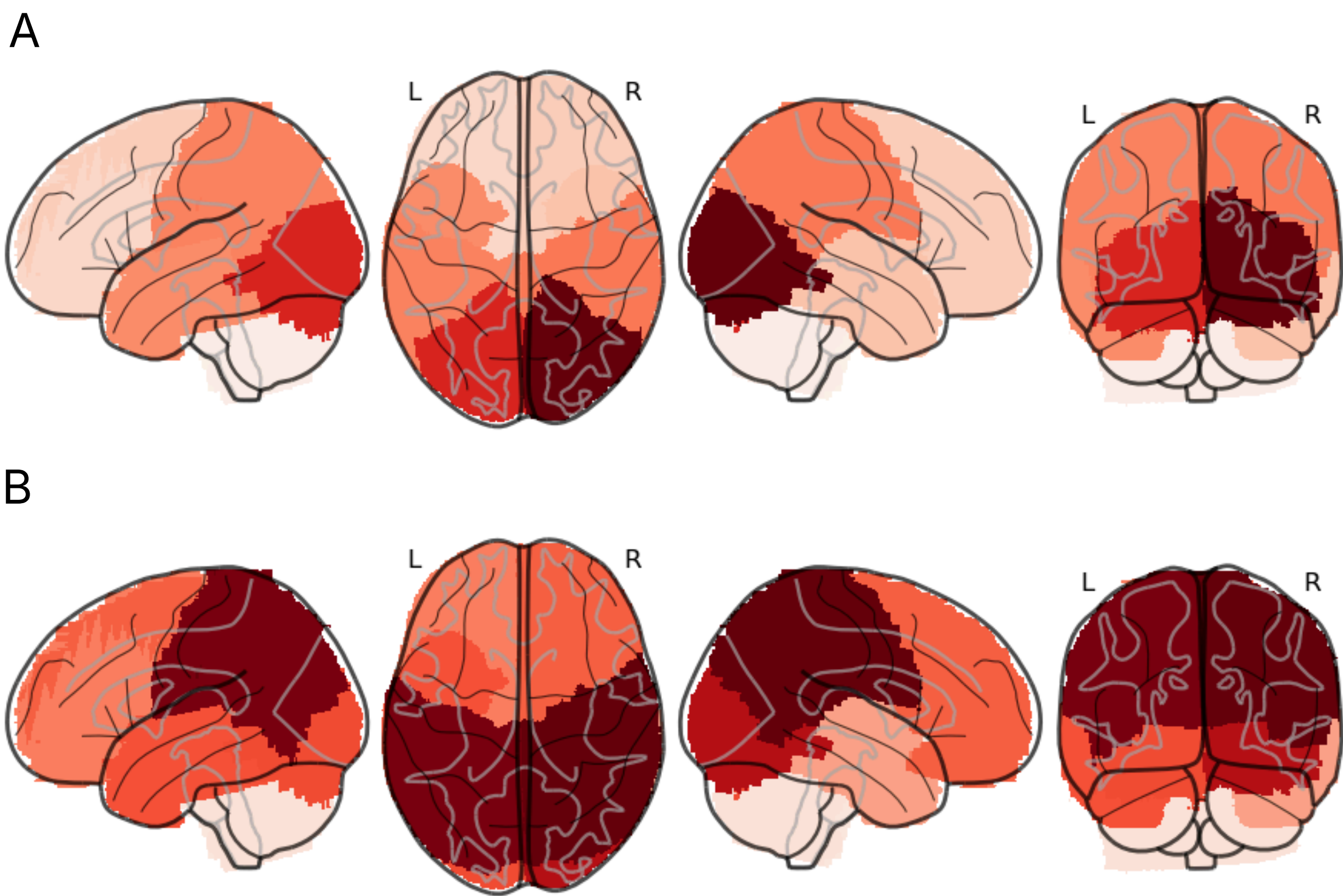


Figure 1. Distribution of ARIA-E lesion volume across the brain.
A. as a function of the total ARIA-E lesion volume.
B. controlled for the lobe volume.
Darker red represents higher lesion volume

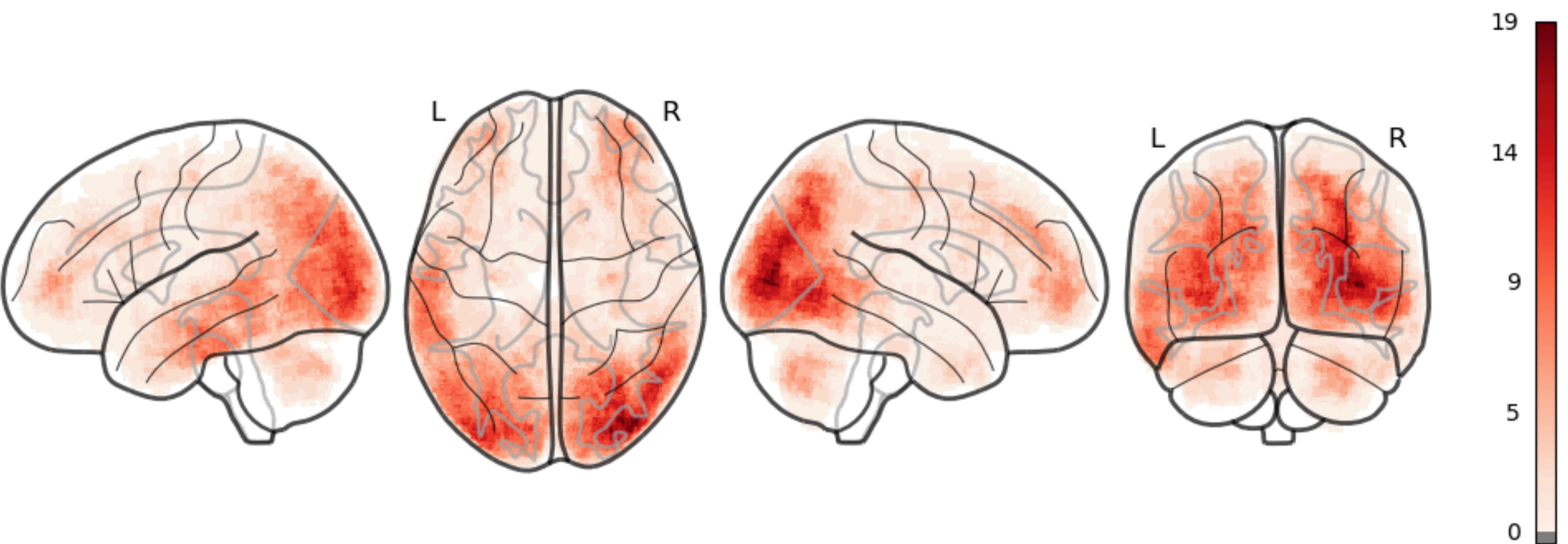


Figure 2. Voxel wise distribution of ARIA-E lesion across the brain.

Results

- Figure 1 displays the distribution of ARIA-E volume load across the brain. We represented both the lesion load as a fraction of the total lesion volume, and also controlled for the volume of the brain region.
- Results show a high fraction of ARIA-E in the parietal (left=19.3% and right=17.2%) and occipital (left=13.3% and right=14.2%) regions.
- When controlling for region volume, the occipital region (left=23.7% and right=25.4%) gains extra relevance as the region with the highest occurrence of lesions/mL.
- Figure 2 shows the voxel wise overlap of ARIA-E, with a maximum voxel wise overlap of 19, and the stronger voxel wise presence in the occipital and parietal lobes.

Conclusions

The results presented here constitute the first evidence, using data from real world clinical practice, of a trend for higher prevalence of ARIA-E lesions in the parietal and occipital cortices. Such results may be supportive of the hypothesis that ARIA-E and Posterior Reversible Encephalopathy Syndrome (PRES) share common underlying mechanisms.