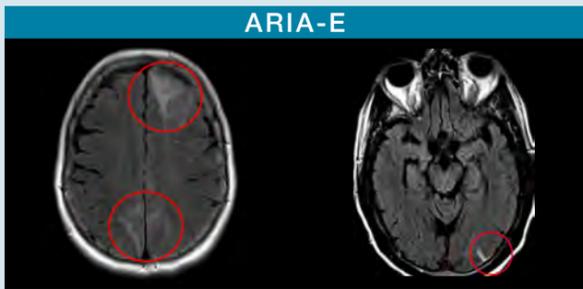




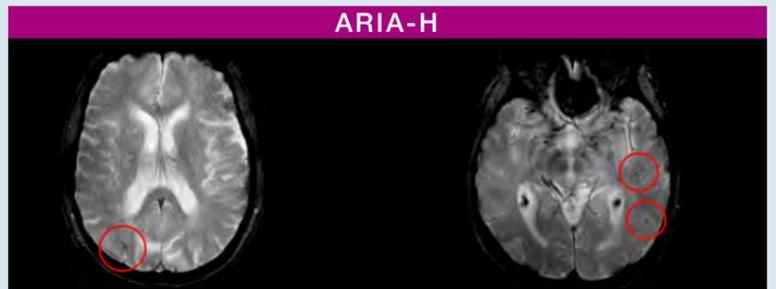
MRI FINDINGS SEEN IN AMYLOID-RELATED IMAGING ABNORMALITIES (ARIA) are a consequence of the presence of amyloid in blood vessel walls (cerebral amyloid angiopathy [CAA]).¹ CAA can cause **spontaneous ARIA** in patients with Alzheimer's disease (AD).¹ The risk of ARIA is increased with the use of monoclonal antibodies that remove amyloid plaque in patients with AD.¹⁻³ In these cases, surveillance MRIs can be used to monitor for ARIA.^{1,3}

ARIA MRI FINDINGS

ARIA is subdivided into ARIA-edema/effusion (ARIA-E) or ARIA-hemosiderin/hemorrhage (ARIA-H)¹⁻³
MRI images data on file



ARIA-E
VASOGENIC EDEMA³ FLAIR hyperintense; parenchymal edema
SULCAL EFFUSION³ FLAIR hyperintense; sulcal abnormalities



ARIA-H
SUPERFICIAL SIDEROSIS⁴ T2*GRE hypointense abnormalities
MICROHEMORRHAGES³ Punctate foci of signal void on T2*GRE in an area of parenchymal edema

Intracerebral hemorrhage (also termed macrohemorrhage) is a rare lobar intracerebral hemorrhage occurs spontaneously in AD and with monoclonal antibodies that remove amyloid, related to underlying CAA^{1,4}

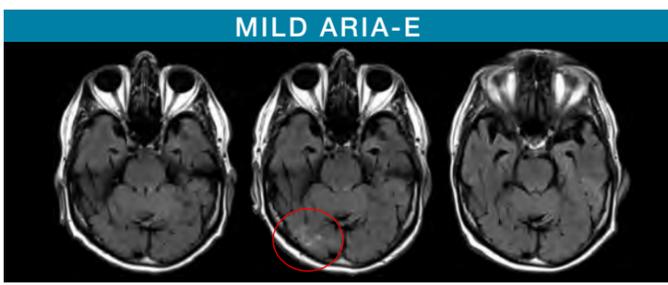
ARIA-E SEVERITY GRADING (IMAGING CASES)⁴

ARIA-E can be categorized by radiographic severity (mild to severe) based on the following criteria:⁴

	MILD	MODERATE	SEVERE
ARIA-E Sulcal and/or cortical/ subcortical FLAIR hyperintensity	1 location <5 cm	1 location 5–10 cm OR >1 location each <10 cm	≥1 location >10 cm

ARIA is graded on the basis of treatment-emergent events.⁴ Adapted from Cogswell et al (2022)

The parenchymal signal abnormalities can range from being subtle in a single region, to being multi-focal, or nearly pan-hemispheric. Sulcal effusions occur in the leptomeningeal or sulcal space, in isolation or near gray matter disturbances¹
MRI images data on file



MILD ARIA-E
Axial T2-FLAIR images acquired in three different timepoints: pre-, post-treatment with monoclonal antibodies that remove amyloid plaque, and 1 month follow-up
Mild ARIA-E: the red circle shows a T2-FLAIR hyperintensity (sulcal effusion) measuring <5 cm in diameter and mono-focal (single region). On follow-up, ARIA-E resolved



MODERATE ARIA-E
These axial T2-FLAIR images acquired pre- and post-treatment with monoclonal antibodies that remove amyloid plaque
Moderate ARIA-E: the red circle shows new T2-FLAIR hyperintensity (parenchymal edema) in two areas measuring 5–10 cm

SEVERE ARIA-E

Axial T2-FLAIR images acquired pre- and post-treatment with monoclonal antibodies that remove amyloid plaque
MRI images data on file



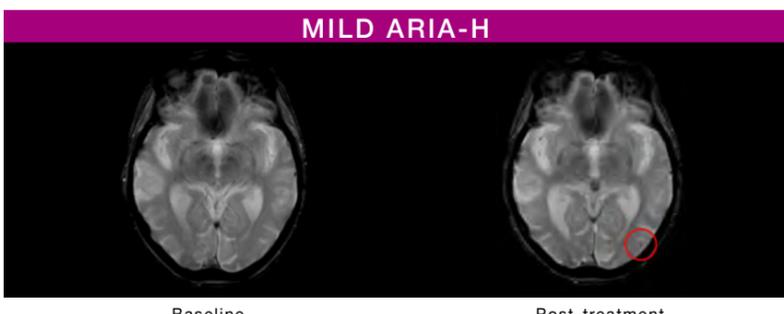
Severe ARIA-E: Severe ARIA-E: the red circle shows an extensive T2-FLAIR hyperintense signal (parenchymal edema) measuring >10 cm (severe ARIA-E). Negative DWI differentiates ARIA-E from acute ischemia or other cause of cytotoxic edema⁴

ARIA-H SEVERITY GRADING (IMAGING CASES)⁴

ARIA-H microhemorrhage and ARIA-H superficial siderosis are each categorized by radiographic severity (mild to severe) based on the following criteria:⁴

	MILD	MODERATE	SEVERE
ARIA-H Superficial siderosis	1 focal area	2 focal areas	>2 focal areas
Number of new microhemorrhages	≤4	5–9	≤10

ARIA is graded on the basis of treatment-emergent events. For ARIA-H, this count includes cumulative new microhemorrhages or regions of siderosis compared with the baseline, pretreatment examination. Adapted from Cogswell et al (2022)⁴



MILD ARIA-H
Axial T2*-GRE imaging acquired pre- and post-treatment with monoclonal antibodies that remove amyloid plaque
Mild ARIA-H, microhemorrhage (red circle): this patient had one treatment-emergent microhemorrhage in the left occipital lobe
MRI images data on file



SEVERE ARIA-H
Axial T2*-GRE imaging acquired post-treatment with monoclonal antibodies that remove amyloid plaque
Severe ARIA-H, microhemorrhage (red circles): ≥10 microhemorrhages in the left and right parietal lobe
MRI images data on file

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- Barakos J, et al. *AJNR Am J Neuroradiol*. 2013;34(10):1958–1965;
- Barakos J, et al. *J Prev Alzheimers Dis*. 2022;9(2):211–220;
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ABBREVIATIONS:

AD, Alzheimer's disease; ADC, apparent diffusion coefficient; ARIA, amyloid-related imaging abnormalities (includes ARIA-E and H); ARIA-E, ARIA-edema/effusion; ARIA-H, ARIA-hemosiderin/hemorrhage; CAA, Cerebral amyloid angiopathy; DWI, diffusion weighted imaging; FLAIR, fluid-attenuated inversion recovery; GRE, gradient recalled echo; MRI, magnetic resonance imaging.

For additional information on ARIA, scan here:



www.UnderstandingARIA.com