

MRI findings 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.¹ The risk of ARIA is increased with the use of monoclonal antibodies that remove amyloid plaque in patients with AD¹⁻³

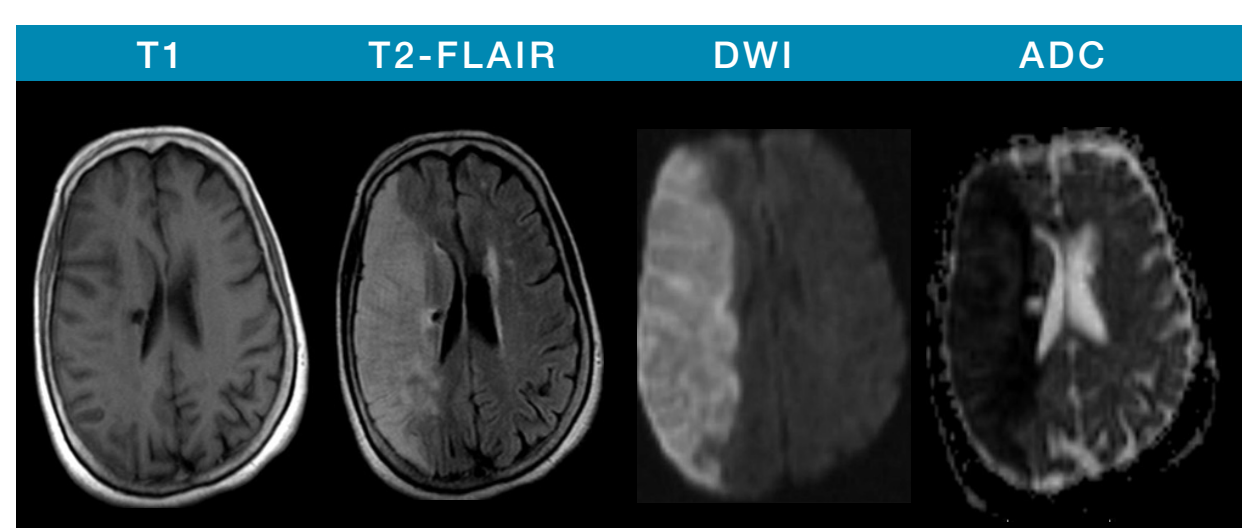
When differentiating between ARIA and other imaging abnormalities, it is important to consider the **full clinical history** of the patient and contextualize it against the **use/non-use of monoclonal antibodies that remove amyloid plaque** and the patient's clinical **presentation/symptoms**²

MRI is key for the diagnosis and differential diagnosis of ARIA

CT would not be expected to detect milder forms of ARIA-edema/effusion (ARIA-E) and is insensitive to the detection of microhemorrhages and siderosis (ARIA-H)³

ISCHEMIC STROKE

Right MCA hyperacute ischemic stroke⁴

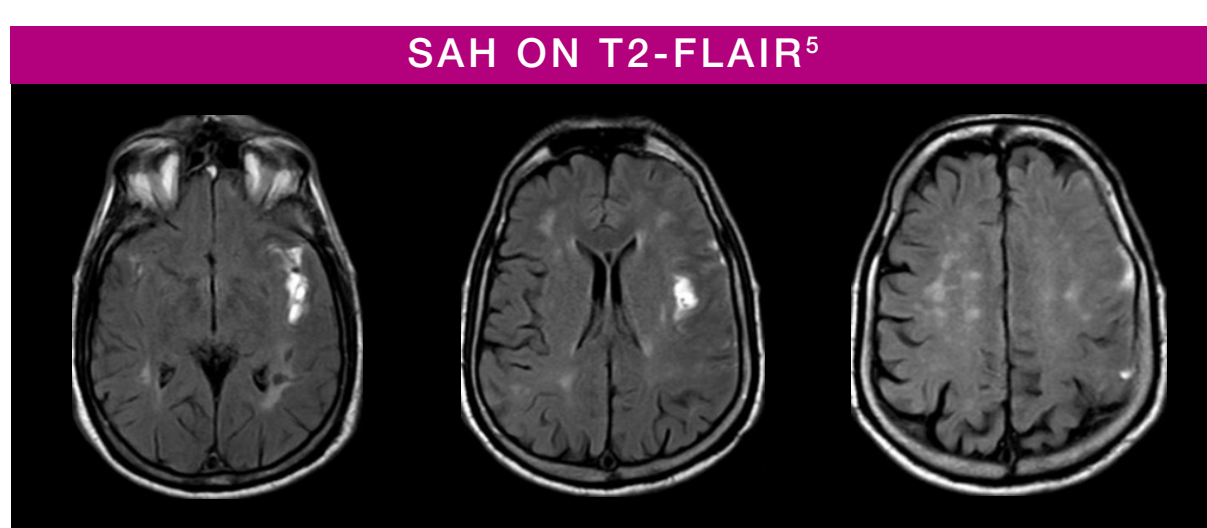


Case courtesy of Balachandran G, Radiopaedia.org, rID: 10704

- Parenchymal FLAIR hyperintensity of ARIA-E edema may be mimicked by ischemic stroke²
- Diffusion weighted imaging (DWI) is needed to differentiate between ARIA-E and ischemic stroke²
- Signs and symptoms of ischemic stroke: acute onset, hemiparesis, dysphasia or dysarthria, facial paresis, paresthesia, eye movement abnormalities, and visual field defects⁶
- Knowing if a patient is on monoclonal antibodies that remove amyloid plaque helps with determining the diagnosis of ARIA²

SUBARACHNOID HEMORRHAGE (SAH)

Left sylvian fissure and adjacent sulci SAH⁵



Case courtesy of Abdrabou A, Radiopaedia.org, rID: 22738

- Leptomeningeal FLAIR hyperintensity of ARIA-E effusion may be mimicked by SAH²
- Common symptoms of SAH: severe headache and vomiting. Decreased level of consciousness and focal neurological signs can also be present⁶
- Differentiating ARIA-E and SAH may require a systematic clinical and diagnostic approach²

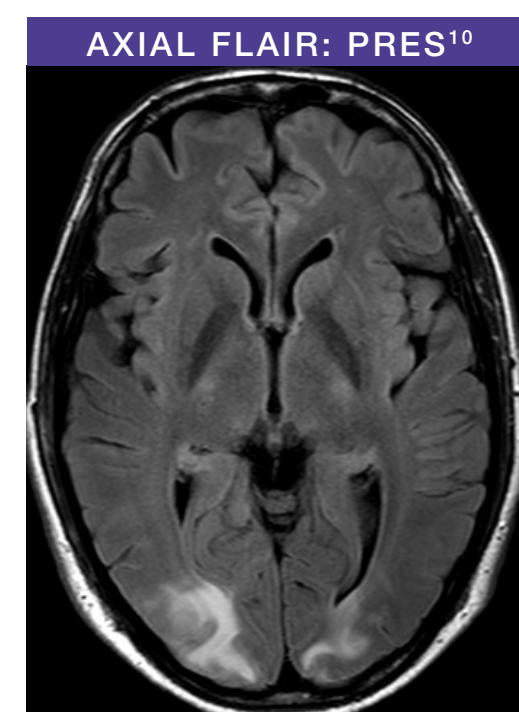
PERILESIONAL EDEMA

- The parenchymal FLAIR hyperintensity of ARIA-E edema may be mimicked by edema due to malignancy and infection²
- The detection of an underlying source of parenchymal edema can be enhanced by gadolinium administration²

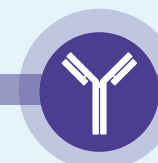
POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES)

- PRES has similar findings to ARIA-E on MRI²
- Causes of PRES: hypertension, renal disease, autoimmune disorders, cytotoxic medications, pre-eclampsia, and sepsis⁷
- Signs of PRES: encephalopathy, epileptic seizures, visual disturbances, and focal neurological deficits⁷
- Less specific signs: (very similar to ARIA) headache, nausea, and vomiting⁷
- Some symptoms of PRES and ARIA may overlap,^{7,8,9} but the clinical context of treatment with monoclonal antibodies that remove amyloid plaque versus underlying risk factors of PRES can enable differentiation²

Case courtesy of Hani Makky Al Salam, Radiopaedia.org, rID: 7697



CEREBRAL AMYLOID ANGIOPATHY – RELATED INFLAMMATION



CAA is characterized by the accumulation of **amyloid β** within blood vessels walls.^{11,12} It is a common neuropathological finding among older adults, especially among those with Alzheimer's disease.¹² CAA is considered an important cause of lobar **intracerebral hemorrhage**^{11,12}

CAA-related inflammation (CAA-ri) represents an unusual life-threatening manifestation of CAA.¹¹ It is a **spontaneous** inflammatory condition that responds to steroids or immunosuppressant therapy¹³

ARIA may be thought of as transient exacerbation of the effect of CAA that occurs **secondary** to treatment with monoclonal antibodies that remove amyloid plaque¹³

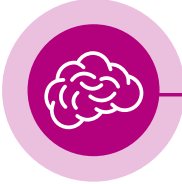
CAA-ri versus ARIA

Both have **similar imaging findings** of sulcal effusions/edema and microhemorrhages/siderosis and are best differentiated by the use/non-use of **monoclonal antibodies that remove amyloid plaque**¹³

KEY CONSIDERATIONS



ARIA can be mimicked by several other disease processes: ischemic stroke, SAH, CAA-ri, and PRES²



Knowing a patient is on monoclonal antibodies that remove amyloid plaque helps with differential diagnosis²



Understanding the patient's clinical history and differences between Ischemic Stroke, SAH, CAA-ri, PRES is key²



History, neurologic exam, and selected diagnostic procedures (including selected neuroimaging modalities and laboratory tests) are beneficial in making a diagnosis²

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For additional information on ARIA, scan here:



www.UnderstandingARIA.com

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; CAA-ri, cerebral amyloid angiopathy-related inflammation; CT, computed tomography; DWI, diffusion weighted imaging; FLAIR, fluid-attenuated inversion recovery; MCA, middle cerebral artery; MRI, magnetic resonance imaging; PRES, posterior reversible encephalopathy syndrome; SAH, subarachnoid hemorrhage.

This content is intended for health care professionals only for educational and informational purposes and does not substitute for sound medical judgement or clinical decision making in the context of medical treatment.