

Evidence Discussion General Guidelines – CT and MR Angiography (CTA and MRA)(HD-1.5)

EviCore
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- Indications for cervicocerebral computed tomography angiography (CTA) of the head and neck vessels include the diagnosis, characterization and/or surveillance of a variety of vascular conditions,¹ including, but not limited to, arterial aneurysms, dissections, ischemic stroke and transient ischemic attacks, vasculitis, traumatic vascular injuries, pulsatile tinnitus, tumors of vascular origin, and prior to surgical intervention. CTA may refer to arterial vessels (CTA) or evaluation of venous structures (CTV).¹
- CTA may be used as the initial imaging modality or as a follow up study for characterizing known disease or assessing changes over time.¹
- Depending on the indication, CTA may be limited to the head to avoid unnecessary radiation to the patient. Examples include surveillance of intracranial aneurysms (that are not located in the posterior circulation).¹
- Risks of CTA include exposure to ionizing radiation, thus, magnetic resonance angiography (MRA) is available as an alternative to reduce radiation exposure. In addition, MRA is an alternative for patients with iodinated contrast allergies or other contraindications to iodinated contrast.^{1,2}
- Magnetic resonance angiography (MRA) indications also cover a variety of vascular conditions of the head and neck, for diagnosis, characterization and surveillance, and may be used to evaluate either arterial (MRA) or venous structures (MRV).²
- MRA, as an alternative modality, is noninvasive, and does not require iodinated contrast.² Limitations include artifacts due to motion, slow or turbulent flow, and susceptibility effects, and claustrophobia.² MRA may be performed without contrast or with gadolinium contrast.² Gadolinium contrast administration is limited to those without renal impairment or known gadolinium contrast allergy.² Additionally, MRA may not be a feasible option for those with contraindications to MRI such as incompatible pacemakers, cochlear implants, neurostimulators or other devices.³ In these scenarios, CTA may be the appropriate alternative.¹

References

1. ACR ASNR SPR Practice Parameter for the Performance and Interpretation of Cervicocerebral Computed Tomography Angiography (CTA) Revised 2020
2. ACR ASNR SPR Practice Parameter for the Performance and Interpretation of Cervicocerebral Magnetic Resonance Angiography (MRA) Revised 2020
3. Expert Panel on MR Safety, Kanal E, Barkovich AJ, et al. ACR guidance document on MR safe practices: 2013. J Magn Reson Imaging. 2013;37(3):501-530. doi:10.1002/jmri.24011