



Cohere Medical Policy – Magnetic Resonance Angiography (MRA), Spinal Canal

Clinical Guidelines for Medical Necessity Review

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Guideline Information:

Specialty Area: Diagnostic Imaging

Guideline Name: Cohere Medical Policy - Magnetic Resonance Angiography (MRA), Spinal Canal

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Type: Adult (18+ yo) | Pediatric (0-17 yo)

Table of Contents

Important Notices	2
Table of Contents	3
Medical Necessity Criteria	4
Service: Magnetic Resonance Angiography (MRA), Spinal Canal	4
Recommended Clinical Approach	4
Medical Necessity Criteria	4
Indications	4
Non-Indications	6
Level of Care Criteria	6
Procedure Codes (CPT/HCPCS)	6
Medical Evidence	8
References	9
Clinical Guideline Revision History/Information	11

Medical Necessity Criteria

Service: Magnetic Resonance Angiography (MRA), Spinal Canal

Recommended Clinical Approach

Contrast-enhanced 3D time of flight techniques and contrast-enhanced CT angiography (CTA) is used to evaluate the spinal arteries, veins, and related pathology as a non-invasive alternative to the gold standard catheter angiography. The Adamkiewicz artery's (AKA) detection rate by MRA is 69% – 100%, but with modern equipment, both MRA and CTA detection rates should approach 100%. Magnetic resonance angiography (MRA) may be appropriate when CTA is contraindicated. CTA has the advantage over MRA in providing greater spatial resolution, imaging the entire spine during one contrast bolus, and providing a faster exam time and less prone to motion artifact. A limitation of MRA is a finite field of view, typically less than or equal to 50 cm. MRI has the advantage over CT in detecting areas of ischemia via diffusion-weighted imaging. Mathur et al. showed a 100% sensitivity in detecting recurrent spinal arteriovenous fistulas post-treatment.

Medical Necessity Criteria

Indications

- **Magnetic resonance angiography (MRA), spinal canal** is considered appropriate if **ANY** of the following is **TRUE**:
- ◆ Initial assessment of a previously inconclusive finding on a prior imaging report that necessitates additional clarification; **OR**
 - ◆ Vascular conditions, known or suspected, including **ANY** of the following:
 - Thrombosis of spinal arteries is suspected on prior imaging or clinically and would change management; **OR**
 - For the evaluation of known or suspected vertebral artery injury when there is also a concern for vascular compromise to the spinal canal and its contents (otherwise neck MRA or CTA is sufficient to evaluate vertebral artery injury)¹⁻²; **OR**
 - ◆ Preoperative, postoperative, or pre-treatment evaluation for **ANY** of the following:

- Localization of the spinal arteries before complex spinal surgery; **OR**
- Aortic aneurysm repair; **OR**
- For characterization of suspected vascular lesions, including tumors or masses of the spinal canal and its contents³; **OR**
- To guide a subsequent digital subtraction angiography meant to assess for a spinal arteriovenous malformation or fistula; **OR**
- ◆ As a follow-up study for **ANY** of the following:
 - Known arteriovenous malformation (AVM)⁴⁻⁵; **OR**
 - Known spinal arteriovenous fistula (AVF)⁶; **OR**
 - To evaluate the patient's post-treatment, post-procedure, or post-surgical progress⁶; **OR**
 - A single follow-up examination for a prior MR/CT finding initially deemed indeterminate, aimed at ensuring no suspicious interval changes have occurred; **OR**
- ◆ For evaluation of **ANY** of the following congenital or acquired conditions:
 - Myelopathy when MRI demonstrates an underlying vascular malformation as a follow-up to demonstrate abnormal vasculature (may be used to guide spinal arteriography and intervention)⁷; **OR**
 - Spinal arteriovenous malformation (AVM)^{3,6,8-11}; **OR**
 - Spinal arteriovenous fistula (AVF), including vascular flow voids on MRI Spine that are suspicious for spinal AVF; **OR**
- ◆ Repeat imaging of a specific area or structure using the same imaging modality (in the absence of an existing follow-up guideline) is considered appropriate when **ALL** of the following is **TRUE**:
 - There is documented clinical necessity; **AND**
 - Prior imaging results of the specific area or structure, obtained using the same imaging modality, must be documented and available for comparison; **AND**
 - **ANY** of the following is **TRUE**:
 - A change in clinical status, such as worsening symptoms or the emergence of new symptoms, that may influence the treatment approach; **OR**
 - The requirement for interval reassessment, which

- may alter the treatment plan; **OR**
- One-time follow-up of a prior indeterminate finding to assess for interval change; **OR**
- The need for re-imaging either before or after performing an invasive procedure.

Non-Indications

→ **Magnetic resonance angiography (MRA), spinal canal** is not considered appropriate if **ANY** of the following is **TRUE**:

- ◆ The patient has undergone advanced imaging of the same body part and for the same indication within 3 months, without being on treatment; **OR**
- ◆ If contrast is used, history of anaphylactic allergic reaction to gadolinium contrast media with detailed guidelines for use in patients with renal insufficiency; **OR**
- ◆ The patient has metallic clips on vascular aneurysms; **OR**
- ◆ Incompatible implantable devices (e.g., pacemakers, defibrillators, cardiac valves); **OR**
- ◆ Metallic foreign body in orbits/other critical area(s) or within the field of view and obscuring area of concern.

*NOTE: MRI in patients with claustrophobia should be requested at the discretion of the ordering provider.

**NOTE: MRI in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.

Level of Care Criteria

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
72159	Magnetic resonance angiography (MRA) of spinal canal and contents with contrast material material
C8931	Magnetic resonance angiography with contrast, spinal canal and contents
C8932	Magnetic resonance angiography without contrast, spinal canal and contents

C8933	Magnetic resonance angiography without contrast followed by with contrast, spinal canal and contents
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Medical Evidence

Raman et al. (2022) performed a systematic review comparing digital subtraction angiography (DSA) with magnetic resonance angiography (MRA) for the evaluation of cerebral arteriovenous malformations (AVMs). In brain AVMs, there is aberrant communication between arteries and veins, resulting in the formation of a nidus, a complex network of intertwined blood vessels. DSA is generally the preferred method due to its superior spatial resolution and hemodynamic properties, representing the current gold standard. There is a need for further research to determine whether MR studies alone could serve as a diagnostic imaging alternative to the current gold standard, DSA, for AVM diagnosis. Numerous studies have highlighted the combined use of both imaging modalities, and some have suggested that specific MR imaging techniques closely resemble the outcomes of invasive conventional scans.¹²

Sharma et al. (2019) compare computed tomography angiography (CTA) and MRA for traumatic vertebral artery injury (TVAI). The primary diagnostic approach for patients with trauma and meeting screening criteria for potential cervical vascular injury is CTA. At the same time, MRA, DSA, and Doppler duplex ultrasound have supportive roles as complementary imaging modalities. The authors also review anatomic variations and potential mimics. Early detection is crucial, and prompt initiation of therapy can significantly reduce the risk of associated strokes.¹³

Mathur et al. (2017) evaluated the effectiveness of first-pass contrast-enhanced MRA in diagnosing and localizing spinal epidural AVFs with intradural venous reflux, as well as differentiating them from other types of spinal AVFs. Of the 42 patients with suspected spinal AVF, 7 patients received a diagnosis. The authors conclude that MRA can identify lesions associated with spinal dural AVFs.⁹

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