



CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all health benefit plans administered by CIGNA Companies including plans formerly administered by Great-West Healthcare, which is now a part of CIGNA.

Subject **Magnetic Resonance Neurography**

Effective Date 3/15/2011
Next Review Date 3/15/2012
Coverage Policy Number 0316

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Hyperlink to Related Coverage Policies

Electromyography Studies
Nerve Conduction Velocity Studies Including Late Response (H-reflex and F-wave)

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Coverage Policy

CIGNA does not cover magnetic resonance neurography because it is considered experimental, investigational or unproven.

General Background

The diagnosis and management of disorders involving peripheral nerves relies upon information derived from a patient's clinical history, neurological examination, and electrodiagnostic studies, including nerve conduction studies (NCS) and electromyography (EMG). Magnetic resonance neurography (MRN) is a magnetic resonance image (MRI) modified with special software and hardware upgrades to generate a high resolution longitudinal and cross-sectional image of major peripheral nerves.

Electrodiagnostic tests are physiological tests, while MRN is an anatomical study. Researchers propose that MRN can add clinically useful diagnostic information after physical examinations and electrodiagnostic tests. However, an accurate diagnosis of a peripheral nerve disorder such as carpal tunnel syndrome for example, is generally made after a thorough physical examination with electromyography and nerve conduction studies, without the need for anatomical imaging.

Literature Review

There is limited evidence in the peer-reviewed scientific literature comparing the accuracy and clinical utility of MNR to other diagnostic tests and imaging procedures. Studies are primarily in the form of small population

case series and case studies therefore are not sufficient to permit any conclusions regarding the role of MRN in the diagnosis or management of peripheral nerve disorders.

Du et al. (2010) retrospectively compared MRN and NCS/EMG in 91 patients with spinal and/or peripheral nerve disorders. MRN was obtained a median of twelve months after the onset of symptoms. The median interval from onset of symptoms to NCS/EMG was eight months. The most common diagnoses were radiculopathy (in 31% of patients), peripheral neuropathy (19%), and brachial plexopathy (in 12%). Radiculopathies were evaluated most frequently in the cervical and lumbar regions (58 and 38%, respectively). Peripheral mononeuropathies most commonly involved the sciatic nerve (in 61% of patients). Compared to NCS/EMG, MRN was found to give the same information in 29 patients (32%), additional diagnostic information in 41 (45%), less information in 15 (17%), and a different diagnosis in 6 (7%). The authors noted that cases in which MRN provides more diagnostic information than NCS/EMG are important in determining when MRNs can be expected to be helpful. For example, MRN was helpful when traditional MRI and NCS/EMG results was inconclusive; but not helpful if the time from onset of symptoms was > one year.

Filler et al. (2005) prospectively evaluated 239 consecutive patients experiencing leg pain in the distribution of the sciatic nerve and in whom a diagnosis could not be established or in whom lumbar spine surgery did not relieve pain were evaluated. Results of these imaging evaluations combined with those of physical examinations were used as indications either for fluoroscopically guided diagnostic spinal injections or for MR imaging-guided injections of muscle or nerve near lumbar soft tissues or in the pelvis. Patients in whom physical examination findings and medical history were consistent with piriformis syndrome and in whom MRN did not rule out piriformis syndrome were considered to have probable piriformis syndrome and were referred for injection. The reference standard for a diagnosis of piriformis syndrome was if the individual's treatment was successful. The authors noted that when piriformis muscle asymmetry alone is used as a criterion to identify individuals with piriformis syndrome, criterion sensitivity and specificity are 46% and 64%, respectively. If unilateral sciatic nerve hyperintensity at the level of the sciatic notch is added as a criterion to identify individuals with piriformis syndrome, criteria sensitivity and specificity are 64% and 93%, respectively.

Professional society opinion on this technology is lacking.

Summary

Available published studies lack direct and timely comparisons of MRN to examinations/other imaging procedures, with established reference standards; the sensitivity, specificity, positive and negative predictive values remain unknown. Due to the lack of well-designed controlled trials, the accuracy and clinical utility of magnetic resonance neurography (MRN) in peripheral nerve disorders has not been established. It remains unclear if MRN would be utilized as a single imaging tool or in conjunction with other imaging techniques including other MR imaging techniques. Additionally, the accuracy and clinical utility of MRN will vary by diagnosis, and thus remains unknown.

Coding/Billing Information

Note: This list of codes may not be all-inclusive.

Experimental/Investigational/Unproven/Not Covered:

CPT* Codes	Description
76498 [†]	Unlisted magnetic resonance procedure (e.g. diagnostic, interventional)

†Note: Experimental, investigational, unproven and not covered when used to report magnetic resonance neurography.

ICD-9-CM Diagnosis Codes	Description
723.4	Brachial neuritis or radiculitis NOS
724.3	Sciatica

724.4	Thoracic or lumbosacral neuritis or radiculitis, unspecified
	All other codes

***Current Procedural Terminology (CPT®) ©2010 American Medical Association: Chicago, IL**

References

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5. Filler AG, Maravilla KR, Tsuruda JS. MR neurography and muscle MR imaging for image diagnosis of disorders affecting the peripheral nerves and musculature. *Neurol Clin*. 2004 Aug;22(3):643-82, vi-vii.
6. Grant GA, Goodkin R, Maravilla KR, Kliot M. MR neurography: diagnostic utility in the surgical treatment of peripheral nerve disorders. *Neuroimaging Clin N Am*. 2004 Feb;14(1):115-33.

Policy History

Pre-Merger Organizations	Last Review Date	Policy Number	Title
CIGNA HealthCare	3/15/2008	0316	Magnetic Resonance Neurography

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