MedPOINT MANAGEMENT	**Clinical Protocol:** Brain MRI	
	ORIGINAL EFFECTIVE DATE: 12/28/2011	**REVIEWED/REVISED DATE(S):** 05/28/2019
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PROTOCOL OVERVIEW

The Clinical Protocol advises on indications and guidelines for Brian MRI.

INDICATIONS

I. Clinical Indications

Brain MRI may be indicated for **1 or more** of the following:

a. Neurologic abnormality or deficit, unexplained, as indicated by **1 or more** of the following:
   i. Focal sensory deficit (e.g., anosmia, numbness, paresthesia) of the face, limb, or whole side of the body
   ii. Focal weakness of face, limb, or whole side of the body
   iii. Change in speech or language (e.g., dysarthria, aphasia)
   iv. Ataxia or gait disturbance
   v. Papilledema
   vi. Visual disturbance (e.g., diplopia, visual field defect, nystagmus, visual loss)
   vii. Horner syndrome (unilateral miosis, ptosis, facial anhidrosis)
   viii. Other cranial nerve palsy
   ix. Altered mental status
b. Headache, with symptoms or signs suggesting structural cause.
c. Hearing loss, as indicated by 1 or more of the following:
   i. Unexplained unilateral sensorineural hearing loss documented by audiometry
   ii. Congenital sensorineural hearing loss
   iii. Hearing loss associated with neurologic symptoms or focal findings
d. Dizziness or vertigo, as indicated by 1 or more of the following:
   i. Focal neurologic findings (e.g., weakness, numbness, paresthesia or one side of body)
   ii. Cerebellar findings (e.g., incoordination of voluntary movements, intention tremor, disorder of equilibrium or gait, diminished muscle tone)
   iii. New-onset headache or neck pain
   iv. Unresponsive to symptomatic treatment
   v. Unresponsive to antibiotic treatment for sinus or ear infection
e. Preoperative imaging for cochlear implant
f. Monitoring of acoustic neuroma being followed without surgery; intervals include 1 or more of the following:
   i. Six and twelve months after initial diagnosis
   ii. Annually for next year
   iii. Every 1 to 2 years thereafter
g. Monitoring after radio-surgical removal of acoustic neuroma: 6 and 12 months, then annually for 5 years, then every 2 years thereafter.
h. Dementia
i. Delirium or change in level of consciousness

j. Syncope
k. Head trauma
l. Primary or metastatic brain tumor, melanoma
m. Non-small cell lung cancer, small cell lung cancer
n. Epilepsy or seizure disorder
o. Hydrocephalus
p. Cerebral infection
q. Clinical isolated syndrome, multiple sclerosis, or other central nervous system demyelinating disease (e.g., Sjogren's syndrome, systemic lupus erythematosus)
r. Parkinson disease or other neurodegenerative disorders
s. Suspected pituitary tumor
t. Follow-up after treatment of pituitary tumor
u. Precocious puberty
v. Suspected transient ischemic attack or ischemic stroke

DISCUSSION

For new-onset unprovoked seizures in adults, a consensus guideline recommends neuroimaging with either brain CT or MRI. Epilepsy is defined as 2 or more unprovoked afebrile seizures. For children with epilepsy, an expert consensus guideline recommends neuroimaging with brain MRI for the following: status epilepticus; failure to control seizures, worsening seizures, or changes in seizure manifestations; seizures in children younger than 2 years of age, excluding those with febrile seizures; abnormal neurologic examination; a history of significant development delay, arrest, or regression; or a new-onset focal seizure.

For evaluation of hydrocephalus or its complications, brain MRI is a standard imaging modality.

For clinical suspicion of a demyelinating disease such as multiple sclerosis in patients presenting with a clinically isolated syndrome, most commonly manifested as unilateral optic neuritis, brainstem syndrome, or partial myelitis, diagnostic criteria for multiple sclerosis have been developed based on the demonstration of central nervous system lesions disseminated in space and disseminated in time on MRI imaging of the brain and, if appropriate, on spinal cord imaging. Requirements for radiographic dissemination in time criteria for multiple sclerosis include either the simultaneous presence of both gadolinium-enhancing (new) and nonenhancing (older) lesions on the same MRI or new T2 weighted lesions on a repeat MRI performed at least 30 days from the initial onset of symptoms.

For Parkinson disease and other neurodegenerative conditions, MRI is helpful in differentiating Parkinson disease from atypical Parkinson disease, and can provide additional evidence for the presence of other conditions such as progressive supranuclear palsy.

For suspected or known neuroendocrine disease of the pituitary or hypothalamus, an expert consensus guideline recommends MRI as first-line imaging.

For precocious puberty, brain MRI is indicated to rule out hypothalamic lesions such as hamartoma.

For clinical suspicion of a transient ischemic attack, an expert consensus guideline recommends urgent brain MRI with diffusion-weighting imaging, preferably with 24 hours of symptom onset. For acute ischemic stroke, an expert consensus guideline recommends urgent brain imaging, such as MRI

if emergently available and not contraindicated, or CT, prior to initiating any specific therapy, including thrombolytic medication. An evidence-based national specialty society guideline recommends brain MRI with diffusion-weighted imaging for the diagnosis of ischemic stroke within 12 hours of symptom onset. A prospective study of 356 consecutive patients presenting with clinically suspected stroke concluded that although both brain MRI and CT had comparable accuracy for detection of intracranial hemorrhage, brain MRI had greater sensitivity than CT for the detection of acute ischemic stroke.

CITATION

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