

RADIOLOGY CHECKLISTS FOR SEIZURE

Imaging Findings	Cause
Brain and CSF Spaces	
Rim-enhancing mass with surrounding white matter edema	Brain abscess
Rim-enhancing mass with surrounding white matter edema; multiple lesions with metastatic ds	Brain tumor
Thickened and/or enhancing meninges	Meningitis
Mass with characteristic “bag of worms” appearance	Arteriovenous malformation
Brain swelling; abnormal signal/density and enhancement	Encephalitis
Increase SI on T2WI in the hippocampus; atrophy of the hippocampus	Mesial temporal sclerosis
NF1: masses (optic nerves, brainstem, spine, brain), sphenoid wing dysplasia; axillary or inguinal freckles; NF2: bilateral schwannomas, meningiomas, and ependymomas	Neurofibromatosis
Vasogenic edema in the parieto-occipital region with associated increased SI on T2WI; normal DWI	Hypertensive encephalopathy (PRES)
Abnormal brain density/SI; brain swelling; abnormal enhancement; restricted DWI; associated hemorrhage	Stroke
Brain anomaly depending on the nature and extent of the specific disease (see footnote). Some are quite subtle and are best evaluated with 3T studies interpreted by subspecialists.	Congenital or developmental brain anomaly ¹
Brain swelling; abnormal SI and enhancement	Trauma: Post-concussive

FND = focal neurologic deficit; MSC = mental status changes; Sz = seizures; N/V = nausea/vomiting; SI = signal intensity; CN = cranial nerve; UE = upper extremity; SAH = subarachnoid hemorrhage; IPH = intraparenchymal hemorrhage; NF1 = neurofibromatosis type 1; PRES = posterior reversible encephalopathy syndrome

¹ A term which covers various malformations of cortical development presenting with seizures including tuberous sclerosis, focal cortical dysplasia, hemimegalencephaly, lissencephaly, subcortical band heterotopia, periventricular nodular heterotopia, polymicrogyria, and schizencephaly.

COMBINED CHECKLIST/TEMPLATE FOR CT BRAIN UNENHANCED IN PATIENTS WITH SEIZURE

CT BRAIN UNENHANCED

INDICATION: Seizure. [+Note: evaluation with noncontrast CT is generally indicated for ER patients as a first study to evaluate for gross abnormality. A normal non-contrast brain CT is not sufficient for evaluation of all causes of seizure. For many causes, the ideal workup include MR without and with IV contrast done at 3T.+]

COMPARISON: []

TECHNIQUE: []

Brain and CSF spaces: [Mass (primary or metastatic tumor, abscess, AVM). Swelling (infiltrating tumor, infiltrating infection/encephalitis, contusion, or stroke).]

Vasculature: []

Paranasal sinuses: []

Nasal cavity and nasopharynx: []

Otomastoid findings: []

Bones and joints: []

Orbits: []

IMPRESSION: []

**COMBINED CHECKLIST/TEMPLATE FOR MR BRAIN
IN PATIENTS WITH SEIZURE**

MRI BRAIN UNENHANCED [<AND CONTRAST ENHANCED>]

INDICATION: Seizure.

COMPARISON: []

TECHNIQUE: []

INTERPRETATION:

Brain and CSF spaces: [Mass (primary or metastatic tumor, abscess, AVM). Swelling (infiltrating tumor, infiltrating infection/encephalitis, contusion, stroke). Abnormal brain enhancement (infiltrating tumor, encephalitis, stroke, AVM). Restricted diffusion (stroke). Abnormal meningeal enhancement (meningitis, meningeal carcinomatosis). Hippocampus atrophy or increased SI on T2 weighted images (mesial sclerosis). Abnormal pattern and distribution of grey and white matter (congenital and developmental brain anomalies).]

Pituitary gland and pineal: []

Vasculature: []

Paranasal sinuses: [Sinus opacification, membrane thickening or enhancement, or fluid level (sinusitis).]

Nasal cavity and nasopharynx: []

Otomastoid findings: []

Bones and joints: []

Orbits: []

IMPRESSION:

[]