

Evidence Discussion (HD-9.1)

- The use of advanced imaging is indicated for the initial evaluation of adults with seizure. Unenhanced CT is more readily available so is usually the initial imaging examination performed for adults presenting with first seizure. In the acute setting this primary exam is utilized to exclude conditions requiring urgent or emergent intervention, such as a bleed.¹ CT is also appropriate if MRI is contraindicated and to evaluate seizure foci that contain dystrophic calcifications, such as oligodendrogliomas and tuberous sclerosis,^{1,2} yet the overall success of CT in detecting focal lesions in epilepsy is low, at approximately 30%.² In studies where patients were evaluated with both MRI and CT, CT failed to detect potentially epileptogenic lesions identified on MRI 16-42% of the time¹. Therefore, MRI of the brain is the study of choice to evaluate new-onset seizures (when available), refractory or drug resistant seizures, prior to discontinuation of anti-epileptic therapy, and known seizure with change in semiology.
- If CT is initially performed, it can be followed by an MRI. If an MRI not using the “Epilepsy Protocol” is initially performed, it can be followed by an MRI with the Epilepsy Protocol for greater sensitivity of detection of epileptogenic lesions. The failure rate for detection of lesions improving from 39% to 91% with epilepsy-trained radiologist reading MRI images obtained using a specialized, epilepsy protocol.²⁻⁴

References

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