

# New-onset seizures in adults: Low diagnostic yield of gadolinium contrast in initial brain MRI evaluation.

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**Background and purpose:** The diagnostic utility of contrast MR-imaging in adult new-onset seizures without clinically suspected neoplasia or infection is not well defined in the literature. Imaging guidelines consider both contrast and noncontrast MR-imaging examinations appropriate in this clinical scenario. The purpose of this study was to evaluate the utility of contrast MR-sequences in evaluation of seizure in patients without suspicion for neoplasia or infection.

**Methods:** Imaging and clinical data were reviewed for 103 consecutive patients admitted for phase-1 seizure monitoring with the following criteria: (1) MRI-brain performed with/without intravenous contrast; (2) no clinical suspicion for central nervous system (CNS) infection; and (3) no history of CNS neoplasia, or suspected metastatic disease. Readers designated cases as lesional or nonlesional. Lesional cases were further categorized as either visualized on noncontrast sequences only, contrast sequences only, or both.

**Results:** 29/103 (28%) patients had epileptogenic lesions, 74/103 (72%) were nonlesional studies. 29/29 (100%) lesional abnormalities were detected on noncontrast sequences (sensitivity 100% [95 confidence interval (CI): 88-100], specificity 100% [95 CI: 95-100]). 23/29 (79.3%) lesional cases were visualized on both noncontrast and postcontrast sequences. 6/29 (20.7%) were visualized only on noncontrast sequences. No lesional cases were detected exclusively on postcontrast MR sequences. With an observed nonlesional extraneous contrast MR-imaging rate of 72%, estimated excess cost of contrast MR-imaging per 1000 patients using Medicare data was \$103,680 USD.

**Conclusions:** Contrast MR-imaging has limited diagnostic utility in initial screening of adult new-onset seizure patients without clinically suspected neoplasia or infection. More judicious use of contrast MR-imaging in this patient population may reduce unnecessary exposure to gadolinium and lower associated healthcare costs.