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Teaching NeuroImages: MRI changes of ictal cortical edema and tumor progression in a patient with astrocytoma

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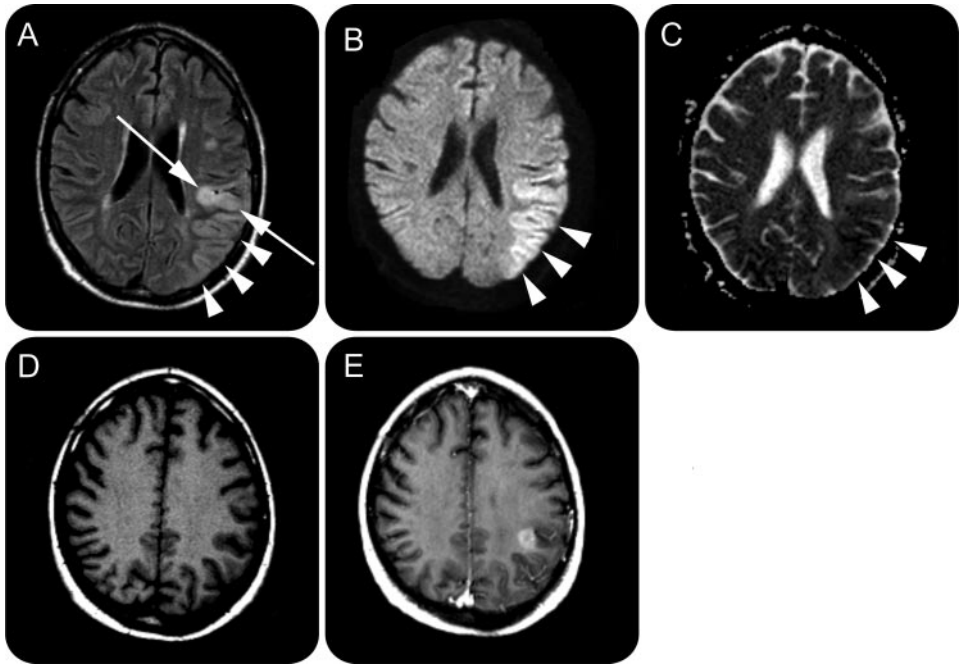
Figure 1 Brain MRI performed 3 hours after EEG shows ictal cortical cytotoxic edema



Fluid-attenuated inversion recovery, diffusion-weighted imaging, and apparent diffusion coefficient map (A–C) show swelling and restricted diffusion of the left parietal cortex (arrowheads). Left parietal tumor (A, arrows) and enhancement after gadolinium administration (D, E).

A 64-year-old man presented with mixed dysphasia after seizures from a left parietal anaplastic astrocytoma. The duration of symptoms (3 days) and nystagmus on rightward gaze prompted EEG, which revealed left posterior nonconvulsive status epilepticus. MRI showed cortical swelling and ictal cytotoxic edema[1] (figure 1). With antiepileptic treatment and steroids, dysphasia improved. Follow-up imaging showed a decrease in cortical edema but progression of the tumor (figure 2). Differentiation between ictal phenomena and tumor progression was difficult, both clinically and on MRI. Thorough clinical evaluation and repeat MRI may help to solve these clinical problems.

AUTHOR CONTRIBUTIONS

Dr. Bouvy: drafting/revising the manuscript, study concept or design, and analysis or interpretation of data. Dr. Leijten: drafting/revising the manuscript and study supervision. Dr. Ramos: drafting/revising the manuscript and analyzing and selecting MRI images. Dr. Wokke: drafting/revising the manuscript, study concept or design, and analysis or interpretation of data.

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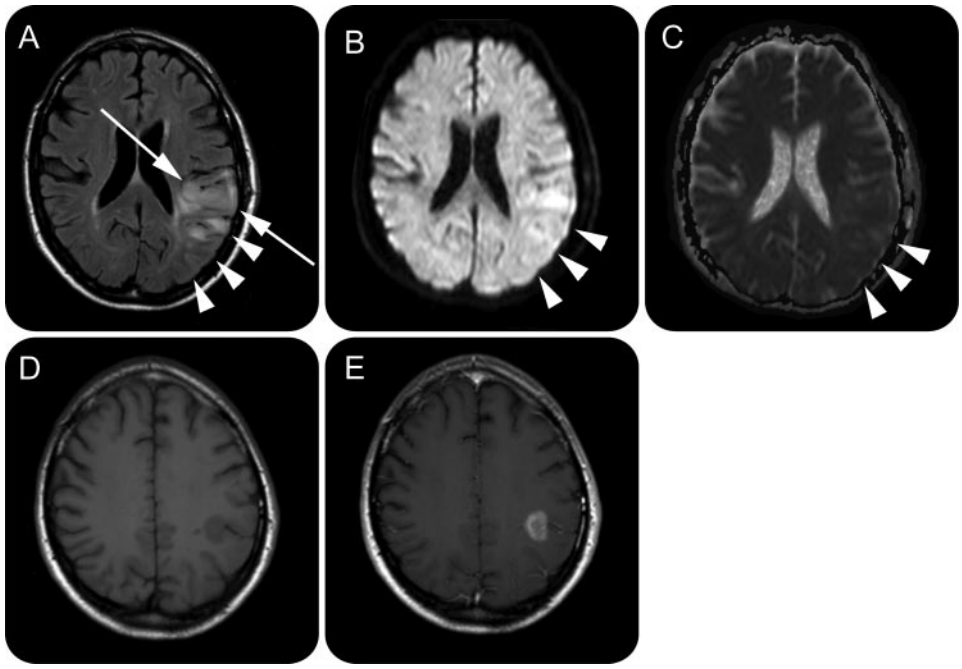
Figure 2 **Brain MRI 17 days later**



A decrease in cortical edema is seen on fluid-attenuated inversion recovery, diffusion-weighted imaging, and apparent diffusion coefficient map (A–C). Tumor progression (A, arrows) and increased enhancement after gadolinium administration (D, E).

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