

# Hemorrhagic encephalitis associated with H3N2 influenza A viral pneumonia

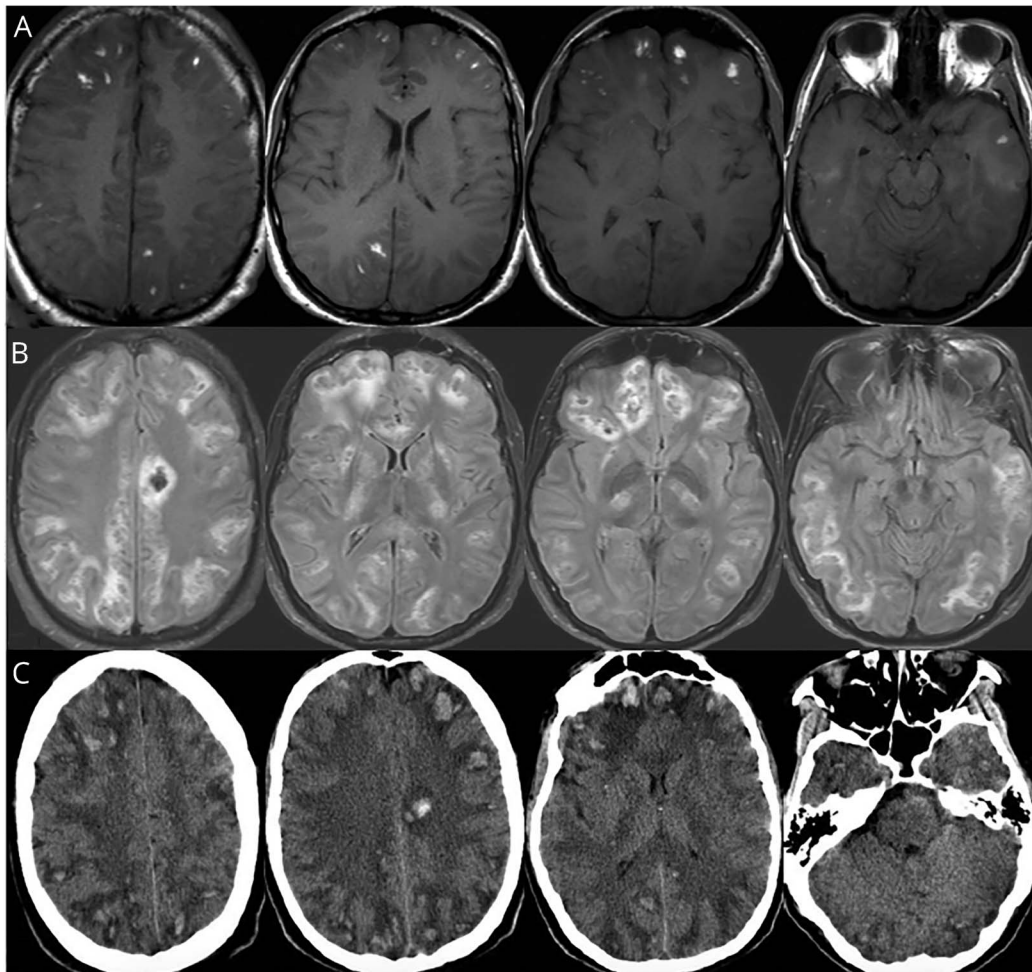
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**Figure 1** Brain MRI and CT scan findings at presentation



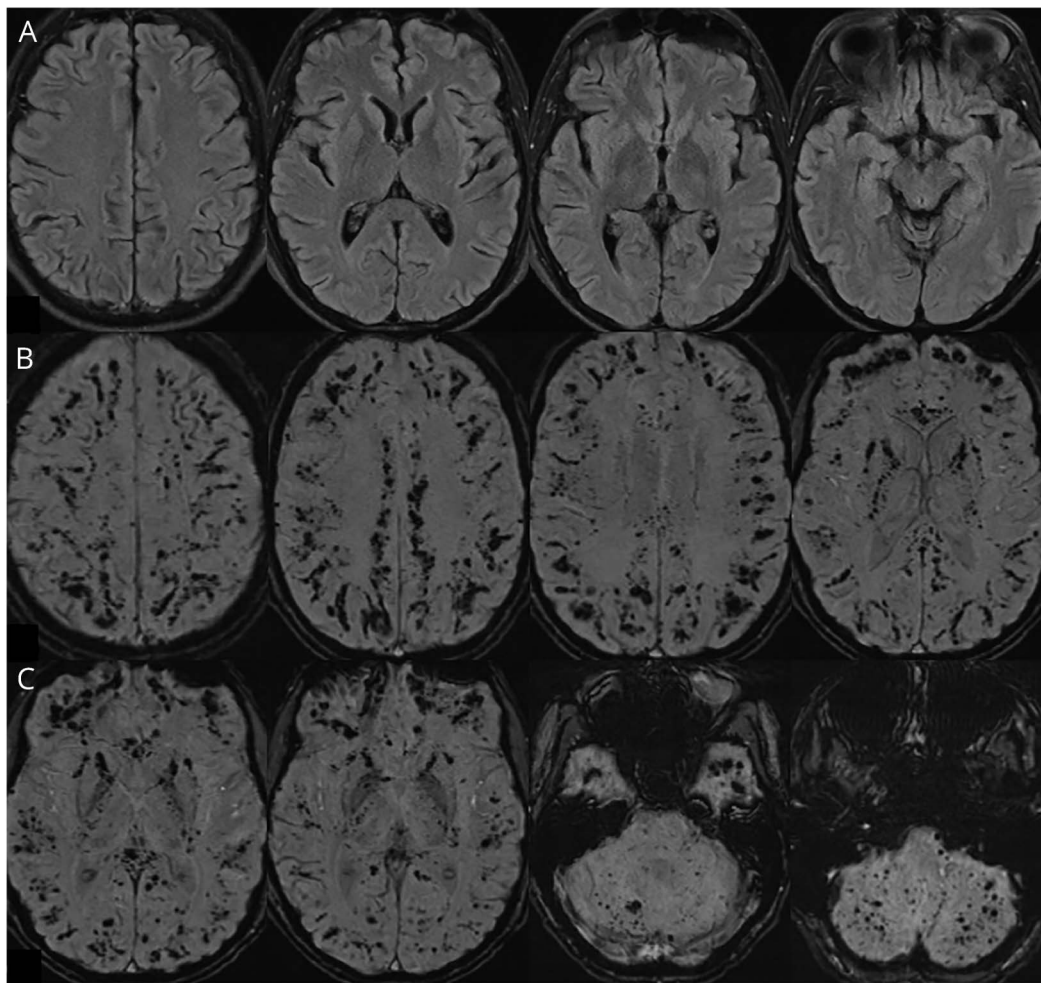
(A) Axial cuts on non-contrast-enhanced T1 sequence MRI show cortical and subcortical hyperintensities indicative of multifocal hemorrhagic lesions. (B) T2 fluid-attenuated inversion recovery (FLAIR) sequence MRI shows widespread subcortical hyperintensities indicative of vasogenic edema that is permeated by hypointense foci of hemorrhage. The appearance of hemorrhagic foci as hyperintense on T1 and hypointense on T2 FLAIR suggests an early subacute stage (3–7 days) of hemorrhage, during which intracellular methemoglobin predominates. (C) Non-contrast-enhanced head CT shows hyperdensities that are predominately subcortical and supratentorial, indicative in this case of multifocal hemorrhagic lesions.

A 40-year-old man presented with altered mentation, preceded a few days earlier by a 38°C fever and shortness of breath. He was diagnosed “...influenza A pneumonia, of the H3N2 subtype, with parainfectious...” hemorrhagic encephalitis and required intubation for hypoxia and depressed consciousness. Brain MRI showed numerous hemorrhages (figure 1). He received oseltamivir, switched to peramivir for better gut absorption. He was discharged to rehabilitation 1 month later. At 6-month

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**Figure 2** Brain MRI fluid-attenuated inversion recovery (FLAIR) and susceptibility-weighted imaging (SWI) findings at 6-month follow-up



(A) Resolution of vasogenic edema on FLAIR MRI axial cuts. (B, C) SWI MRI shows an expected persistence of susceptibility dropout and blooming hypointense changes indicative of the previous innumerable multifocal, predominately subcortical and supratentorial hemorrhagic lesions.

follow-up (figure 2), he had residual deficits in memory and concentration. Montreal Cognitive Assessment score was 28/30. He returned to full-time work as a financial manager at 9 months, and felt subjective normal cognition at 1.5 years after onset.

### Author contributions

Dr. AbdelRazek: study concept and design, manuscript writing. M. Leone: figure formatting, manuscript revision. Dr. Venna: study supervision.

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### Disclosure

The authors report no disclosures relevant to the manuscript. Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures.

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