



Get Clarity On Generics

Cost-Effective CT & MRI Contrast Agents



FRESENIUS
KABI

WATCH VIDEO

AJNR

Are Neuroimaging Findings in Novel Influenza A(H1N1) Infection Really Novel?

R.K. Gupta

AJNR Am J Neuroradiol 2010, 31 (3) 393

doi: <https://doi.org/10.3174/ajnr.A2060>

<http://www.ajnr.org/content/31/3/393>

This information is current as
of August 7, 2025.

9. Galbán CJ, Mukherji SK, Chenevert TL, et al. A feasibility study of parametric response map analysis of diffusion-weighted magnetic resonance imaging scans of head and neck cancer patients for providing early detection of therapeutic efficacy. *Transl Oncol* 2009;2:184–90

S.K. Mukherji

Departments of Radiology, Otolaryngology, Head and Neck Surgery,
Radiation Oncology, and Periodontics and Oral Medicine
University of Michigan Health System
Ann Arbor, Michigan

J.A. Castelijns
Department of Radiology
VU University Medical Center
Amsterdam, the Netherlands

DOI 10.3174/ajnr.A1964

EDITORIAL

Are Neuroimaging Findings in Novel Influenza A(H1N1) Infection Really Novel?

Novel H1N1 (referred to as “swine flu” earlier) is a new influenza virus causing illness in humans. This virus was first detected in people in Mexico and the United States in April 2009. It is spreading worldwide from person-to-person, probably in much the same way as the spread of regular seasonal influenza. The latter can be associated with neurologic complications,^{1,2} but the frequency with which these occur with the novel influenza A(H1N1) virus infection is unknown. Neurologic sequelae such as seizures, encephalopathy, or encephalitis within 5 days of the initial illness were reported in 4 children with H1N1 infection for the first time in Dallas, Texas.³ Brain imaging findings were normal in these children.

The first case of neuroimaging abnormalities in H1N1 infection was reported in a child from Texas presenting with imaging features of acute necrotizing encephalitis.⁴ Subsequently, 2 more cases of encephalitis associated with H1N1 infection have been reported by Haktanir from Turkey⁵ and Ormitti et al from Italy.⁶ Neuroimaging findings in influenza-associated encephalopathy might be normal, but in severe cases, abnormalities can include diffuse cerebral edema and bilateral thalamic lesions.² Lack of evidence of H1N1 viral in-

fection in the CSF suggests that neurologic manifestations might be an indirect effect of respiratory tract infection, similar to the ones observed in influenza A and B viral infections.^{1,2}

The imaging findings may resemble those of acute necrotizing encephalitis or may present as encephalitis with hemorrhage and typically involve the bilateral thalami as seen in all 3 case studies.^{4–8} These imaging features have also been described in Arbovirus encephalitis and may overlap these conditions.⁹ These case studies suggest that imaging may be abnormal in H1N1-associated encephalitis with normal CSF; and in the presence of flu-like symptoms in the endemic zones, H1N1-associated encephalitis should be considered as an important differential diagnosis. Because these patients are known to recover completely with treatment, early recognition of H1N1-associated encephalitis will result in early institution of therapy specific to H1N1 and will possibly help in reducing the associated morbidity and mortality.

References

1. Morishima T, Togashi T, Yokota S, et al. Encephalitis and encephalopathy associated with an influenza epidemic in Japan. *Clin Infect Dis* 2002;35:512–17
2. Maricich SM, Neul JL, Lotze TE, et al. Neurologic complications associated with influenza A in children during the 2003–2004 influenza season in Houston, Texas. *Pediatrics* 2004;114:e626–33
3. Centers for Disease Control and Prevention (CDC). Neurologic complications associated with novel influenza A (H1N1) virus infection in children: Dallas, Texas, May 2009. *MMWR Morb Mortal Wkly Rep* 2009;58:773–78
4. Lyon JB, Remigio C, Milligan T, et al. Acute necrotizing encephalopathy in a child with a H1N1 influenza infection. *Pediatr Radiol* 2010;40:200–05. Epub 2009 Dec 18
5. Haktanir A. MR imaging in novel Influenza A(H1N1)-associated meningoencephalitis. *AJNR Am J Neuroradiol* 2010;31:394–95
6. Ormitti F, Ventura E, Summa A, et al. Acute necrotizing encephalopathy in a child during the 2009 influenza A(H1N1) pandemic: MR imaging in diagnosis and follow-up. *AJNR Am J Neuroradiol* 2010;31:396–400
7. Mizuguchi M, Abe J, Mikkaichi K, et al. Acute necrotizing encephalopathy of childhood: a new syndrome presenting with multifocal, symmetric brain lesions. *J Neurol Neurosurg Psychiatry* 1995;58:555–61
8. Yoshikawa H, Yamazaki S, Watanabe T, et al. Study of influenza-associated encephalitis/encephalopathy in children during the 1997 to 2001 influenza seasons. *J Child Neurol* 2001;16:885–90
9. Gupta RK, Jain KK, Kumar S. Imaging of nonspecific (nonherpetic) acute viral infections. *Neuroimaging Clin N Am* 2008;18:41–52, vii

R.K. Gupta

Department of Radiodiagnosis
Sanjay Gandhi Postgraduate Institute
of Medical Sciences
Lucknow, India

DOI 10.3174/ajnr.A2060