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## EDITORIAL

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

**N**ovel 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,<sup>1,2</sup> 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.<sup>3</sup> 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.<sup>4</sup> Subsequently, 2 more cases of encephalitis associated with H1N1 infection have been reported by Haktanir from Turkey<sup>5</sup> and Ormitti et al from Italy.<sup>6</sup> Neuroimaging findings in influenza-associated encephalopathy might be normal, but in severe cases, abnormalities can include diffuse cerebral edema and bilateral thalamic lesions.<sup>2</sup> 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.<sup>1,2</sup>

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.<sup>4–8</sup> These imaging features have also been described in Arbovirus encephalitis and may overlap these conditions.<sup>9</sup> 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.

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