Acute and Subacute Neuropsychiatric Presentations in H1N1 Viral Encephalitis

To the Editor: Neuropsychiatric complications are rare in influenza virus infections. It is reportedly more common in the pediatric age-group, and the presenting symptoms are altered consciousness and convulsions.\(^1,2\) In findings of our literature review, psychiatric symptomatology like mania and psychosis has not been hitherto reported for influenza. Here, we describe an adolescent young man who presented with manic and psychotic symptoms in the context of H1N1 encephalitis.

Case History
Mr. H, an 18-year-old young man, was brought to the emergency department for high fever, (39°C), cough, and acute change in behavior. He was found to be very confused and aggressive. He did not have any focal neurologic deficits, and there were no reported seizures. There was no past psychiatric or substance abuse history. In the ward, he undressed in public, banged his head against the wall, and claimed that the intravenous cannula in his arm was an explosive device, which he pulled out. H1N1-type influenza was confirmed by polymerase chain reaction assay of nasopharyngeal and oropharyngeal swabs. Two successive MRI brain scans were uninformative. An EEG showed diffuse slowing. CSF studies were consistent with a viral infection but was negative for H1N1. He received a full 5-day course of oseltamivir and intravenous acyclovir. As his fever abated, he appeared less confused, but some psychotic symptoms persisted. He was discharged at the request of his family and when he was deemed to be no longer infectious.

About a month after discharge, his family brought him back into the hospital, reporting that he had not improved further, and, instead, his behavioral symptoms had worsened. This time, he was afebrile, and vital signs were stable; he was admitted to the psychiatric ward. On assessment, he was disoriented and confused. His affect was labile, and his speech was loud and pressured. He had grandiose ideas about being a top soccer player, and desired by many women. On occasion, he reported hearing vague voices, which he thought was the devil speaking to him. At times, he was aggressive toward his family and the ward staff. He was treated with haloperidol but developed extrapyramidal symptoms. He then started on risperidone, and the dose was stabilized at 2 mg twice per day. Valproate was also started in view of his prominent affective symptoms. Mr H.’s condition improved over the 3-week hospitalization, with significant attenuation of manic and psychotic symptoms. His family reported he was “90% of his usual self.” He was discharged and closely followed-up in the outpatient service. Three weeks after discharge, his family requested that all medications be stopped, but he was still followed closely. Neuropsychological assessment showed no major deficits in verbal and nonverbal abilities. He was able to resume schooling and his regular activities. When asked, Mr. H. could remember parts of the hospitalization and, especially, felt sorry that he was aggressive to his mother. Seven months after discharge, he remained completely free of symptoms and was performing well at school.

Discussion
Mr. H. first presented with fever, confusion, and acute behavioral change, in the context of confirmed H1N1 infection. Despite a full course of antiviral medication, his cognitive and behavioral problems worsened. The temporal sequence of events suggested that these symptoms could be the neuropsychiatric sequelae of the H1N1 infection, a systemic immune response, and/or a postinfective process. It was also possible that his symptoms represented a primary psychiatric disorder precipitated by or simply coincident with a viral infection. Standard-treatment oseltamivir has been reported to be associated with neuropsychiatric sequelae. However, in Mr. H.’s case, his mental state and behavioral changes preceded the initiation of oseltamivir treatment.

Treatment of influenza with antiviral medications has been shown to reduce the rate of complications. However, the effectiveness of antiviral treatment in preventing influenza-associated encephalitic sequelae is unknown.\(^3\) In a case series of four children with neurologic complications associated with H1N1 virus infection, all patients recovered fully with no neurologic sequelae after being given oseltamivir.\(^4\) However, a prospective, 11-year review of 311 children admitted for acute influenza virus
infection in Toronto, Ontario, Canada, between 1994 and 2004, found that 8 of the 14 patients with neurologic complications had neurologic sequelae. These included seizure disorders, developmental delay, hemiparesis, ataxia, and speech disorder.\(^1\) There is a recent case report of a one-time seizure in a 17-year-old with H1N1. In this instance, the CSF was also negative for H1N1.\(^5\)

In our literature review, secondary mania or psychosis as part of the H1N1 encephalitic syndrome have not been reported. However, mania has been reported in cases of herpes-simplex encephalitis.\(^6,7\) The incidence of neuropsychiatric complications from H1N1 infections is presently unknown. Further studies on the early identification, characterization, treatment, and outcomes are warranted.

Tih-Shih Lee, M.D.
Dept. of Psychiatry
Duke University
Durham, NC

References