

Novel Influenza A (H1N1) and Acute Encephalitis in a Child

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Neurologic complications of seasonal influenza have been well described in past epidemics. Encephalitis and encephalopathy, seizures, as well as post-infectious encephalitis and Reye syndrome, constitute the majority of these complications. The role of neurologic complications in the morbidity associated with the novel H1N1 virus is yet to be outlined. We report here the occurrence of encephalitis caused by the novel H1N1 virus in a pediatric patient, who shares many features of the few previously reported cases [1-3].

PATIENT DESCRIPTION

A previously healthy, febrile 9 year old boy was brought by ambulance to the Emergency Department following a convulsive episode. He was found unresponsive yet stable by the paramedics, who gave him a single dose of midazolam during transfer. The boy's mother reported fever accompanied by headache, cough and a sore throat beginning the day before admission. Headache subsequently worsened, with episodes of vomiting and apathy. The seizures consisted of rhythmic jerks and loss of urinary continence that lasted 10 minutes and ceased spontaneously. This was his first convulsive episode, with no personal or family history of febrile convulsions or neurologic diseases.

This was an obese child with a body mass index of 37.6, who upon admission to the Emergency Department was drowsy and disoriented and in marked agitation. Temperature was 40.0°C, oxygen saturation was maintained on a non-rebreather mask, and blood pressure was within normal limits. Apart from his neurologic state, the patient was tachypneic, yet the rest of the examination was unremarkable.

Blood count showed leukocytosis of 13,300 cells/µl with 83.4% neutrophils. Blood chemistry, gases, ammonia and liver function tests were within normal limits. C-reactive protein was elevated to 54.6 mg/L. Computed tomography demonstrated clouding of the ethmoidal and maxillary sinuses but no intracranial pathology. A chest radiograph was normal. Lumbar puncture yielded 21 lymphocytes and 12 neutrophils/µl, with normal glucose and mildly elevated protein levels. Empiric therapy with ceftriaxone, acyclovir and oseltamivir was initiated, and the patient was admitted to the pediatric intensive care unit. Nasopharyngeal swabs were positive for the novel H1N1 influenza virus. Subsequent results of direct cerebrospinal fluid microscopy and bacterial culture were negative as was serologic testing of the CSF for H1N1 influenza, herpes and enteroviridae. Blood bacterial culture and serology for West Nile virus were negative. Ceftriaxone and acyclovir therapy was therefore discontinued and the patient completed a 5 day course of high dose oseltamivir 150 mg twice a day.

The patient remained disoriented with a diminished level of conscious-

ness even though he did not receive any sedatives or narcotics. An electroencephalogram showed a mild background disturbance consistent with the encephalopathic state. Gradual neurologic improvement emerged on the third day of hospitalization and continued until the patient regained normal neurologic status 2 days later. The patient was discharged on the sixth day of hospitalization having attained a full recovery, and with no apparent neurologic or other sequelae.

COMMENT

Our patient suffered from fever and an altered mental status lasting several days in addition to CSF pleocytosis and an EEG tracing indicative of encephalitis, thus fulfilling the Centers of Disease Control criteria for encephalitis [1]. A large study of past epidemics of seasonal influenza estimated a 10% incidence of neurologic complications among hospitalized children, while encephalopathy was observed in 1% of the seasonal influenza pediatric patients [4]. Estimates from the current H1N1 influenza pandemic are still lacking, although a retrospective case series of children at an Australian tertiary care center reported encephalopathy in 3 of 43 pediatric patients, a rate higher than would have been expected according to previous experience with seasonal influenza [2].

Considering the small number of reports, it is difficult to characterize the neurologic morbidity associated with the novel virus. Still, the cases of encephalopathy reported so far from the current

H1N1 pandemic display several similarities. The patients are children and young adults. The onset of encephalopathy, and in some cases also seizures, occurs relatively early in the clinical course, and the condition is self-limiting and leaves no residua. The CSF may show mild pleocytosis with no other noteworthy abnormalities. No influenza or other virus was detected in the CSF of any of the patients reported. Neuroimaging did not show any intracranial abnormalities in most of the cases, and the EEG was typically compatible with an encephalopathic process. All the patients were successfully treated with oseltamivir, while some received the drug in combination with rimantadine [1-3]. These findings conform with data

collected during previous influenza seasons in the western world [4,5].

In the present report, we describe the first case of encephalitis due to the novel H1N1 virus in Israel, thereby adding to the accumulating body of evidence depicting the nature of the current influenza pandemic. Nevertheless, clinicians are still faced with significant uncertainty when treating H1N1 patients and should be on the alert for unique and atypical presentations.

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