Fatal H1N1-related acute necrotising encephalopathy in an adult

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DESCRIPTION

A 20-year-old woman was referred to our centre in an intubated state with a Glasgow Coma Scale of 2T/15 (E1VTM1) after being found in an unresponsive state at home. She initially had a fever with productive cough for 3 days followed by 2 days of diarrhoea and vomiting. On the morning of presentation to the outside clinic, she had reported severe headache followed by loss of vision in both eyes and later was found unconscious. She had no noted episodes of seizure activity. Her vitals were stable on arrival, blood pressure was 90/60 mm Hg, pulse rate was 96 beats/min and room air saturation was 92%. Neurological examination revealed anisocoria with bilaterally absent direct and indirect light reflexes and doll's eye phenomenon.

Blood investigations revealed elevated liver enzymes, alanine aminotransferase was 3434 U/L (normal <35 U/L) and aspartate aminotransferase was 2677 U/L (normal <35 U/L). Blood and urine cultures grew no organism. Toxicology and viral hepatitis screening were negative. Chest radiography showed bilateral interstitial infiltrates which was suggestive of atypical pneumonia. Oropharyngeal swab for reverse transcription PCR H1N1 was found to be positive. Though nasopharyngeal swab for influenza is the norm for diagnosis of H1N1, an oropharyngeal swab has been noted to have better sensitivity.¹

MRI brain showed symmetrical hyperintense lesions involving bilateral thalami, posterior part of brainstem and cerebellum hemispheres, vermis in T2-weighted and fluid-attenuated inversion recovery images. These lesions also showed a laminated pattern of diffusion restriction and haemorrhage along with diffuse cerebral oedema and bilateral tonsillar herniation. There was also diffuse leptomeningeal enhancement and the supratentorial ventricular system appeared dilated due to mass effect on the fourth ventricle (figure 1). These findings were highly suggestive of acute necrotising encephalopathy (ANE) which is an extremely rare neurological manifestation of H1N1 in adults. Cerebrospinal fluid (CSF) analysis was not attempted given the presence of tonsillar herniation. The patient was started on intravenous mannitol, high-dose oseltamivir (150 mg twice daily) and intravenous immunoglobulin (0.4 g/kg/min). Zanamivir is equally efficacious as oseltamivir but it is not available in India.² Our patient succumbed to the illness, despite treatment.

ANE is an uncommon parainfectious condition that is usually triggered by viral infections, most

Figure 1 (A) T2-weighted image showing hyperintensities in the bilateral thalami (yellow arrows). (B) T2 fluid-attenuated inversion recovery image showing similar findings. (C) T1-weighted image showing effacement of sulci and gyri indicating cerebral oedema. (D) Apparent diffusion coefficient map showing diffusion restriction in the same regions corresponding to the T2 image. (E) Susceptibility-weighted image showing signal loss in the bilateral thalami suggesting haemorrhage. (F) T1-weighted image sagittal cuts showing tonsillar herniation (yellow arrow).

commonly influenza A, B and human herpesvirus 6.³ Although the pathogenesis of ANE is unclear, it is suggested that hypercytokinemia or 'cytokine storm' may play an important role.⁴ ANE secondary to influenza is a relatively common complication of the infection seen in children but such presentation in adulthood is extremely rare with only about eight cases documented in the literature. In a 2-year surveillance study conducted through the National British Surveillance Study, 25 cases (21 children and 4 adults) had neurological manifestations and only 7 cases (6 children and 1 adult) had acute encephalopathy syndromes.⁵ The mortality associated with

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Learning points

- ▶ Acute necrotising encephalopathy is one of the devastating complications of H1N1. It can cause rapid neurological deterioration and even progress to coma.
- ▶ Early detection and initiation of treatment in patients with influenza can reduce the occurrence of complications and thereby reduce mortality.

ANE is as high as 30%.⁶ There have been no recommended therapies for ANE. Given the postulated hypothesis of hyper-cytokinaemia, the use of intravenous corticosteroids, intravenous immunoglobulin and plasmapheresis has been tried and shown to have a favourable outcome.³

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