Acute Cerebellitis Associated with Dual Influenza A (H1N1) and B Infection

Abstract:
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We describe the case of a 6-year-old girl who presented to our Emergency Department (ED) with acute onset of ataxia and speech disturbance. Investigative workup included a nasopharyngeal aspirate (NPA) which was influenza A (H1N1) and B positive during the 2010/2011 influenza season. Magnetic resonance imaging (MRI) of the brain confirmed findings consistent with cerebellitis.

Introduction
Acute cerebellitis is one of the commonest causes of acute cerebellar dysfunction in children. Aetiologically it is usually an infectious, predominantly viral process, but can also occur post-vaccination.

Case Report
A 6-year-old girl presented to our urban, tertiary paediatric emergency department (ED) with acute onset (within 6 hours) of generalised debilitating headache, progressively worsening dysarthria and ataxia. Notably she had been unwell two weeks prior to presentation with rhinitis, cough, and pyrexia (spiking to 40°C). She was treated by her General Practitioner with a five day course of co-amoxiclav. Vaccinations schedule was up to date. She denied ingestion of unknown/illicit substances and there was no history of head trauma. Background medical history included an isolated reflex aortic syncopal event aged 22 months.

Vital signs and capillary blood glucose were within normal limits. Cardiac, respiratory and abdominal examinations were unremarkable. Examination revealed palpable cervical lymphadenopathy and hyperemic tympanic membranes bilaterally. Glasgow coma scale was 15/15. Tone, power and reflexes were normal with downgoing plantars bilaterally. Coordination revealed significant dysdiadochokinesis bilaterally with past pointing (no associated intention tremor). Sensory examination was intact. Stifling scanning dysarthria was noted. There was significant truncal ataxia; she was unable to independently mobilise in the ED. Rebound was evident and there was sustained horizontal nystagmus, more notable on left lateral gaze (5-6 beats); otherwise cranial nerves I-XII were grossly intact. Fundoscopy was normal. Routine bloods in the ED revealed leucopenia (3.1×10^9/L; range 5.0-15.0 ×10^9/L) with lymphopenia (1.6×10^9/L; range 2.0-9.5 ×10^9/L); macrothrombocytes were seen on smear. Erythrocyte Sedimentation Rate was raised at 30mm/hr (range 0-10). Haemoglobin, urea and electrolytes were normal. Mid stream urine microscopy and toxicology screen were negative. Chest radiography showed mild bilateral bronchial prominence. Computed Tomography (Brain) did not identify any intracranial abnormality. Lumbar puncture parameters were normal and cultures negative but CSF was not tested for influenza infection.

Of significance NPA was influenza A (Pandemic H1N1 2009) positive and influenza B co-infection was detected. It later transpired that a number of children in school had been diagnosed with suspected influenza infection. MRI of the brain revealed findings consistent with a diagnosis of cerebellitis, no enhancement was noted post contrast. The patient was empirically commenced on intravenous acyclovir which was discontinued upon receipt of cerebral spinal fluid (CSF) for varicella zoster and herpes zoster viruses were negative. Other infectious considerations include Coxsackie virus. Herpes simplex virus, Epstein-Barr and Rotavirus. This case is likely among a growing number of reports implicating influenza A (H1N1) as a causative agent for acute cerebellitis5; influenza B positive during the 2010/2011 influenza season. Magnetic resonance imaging (MRI) of the brain confirmed findings consistent with cerebellitis.

Discussion
Acute cerebellitis is an uncommon inflammatory syndrome characterised by rapid onset as highlighted by this case, and typically caused by acute infection. Differential diagnoses for cerebellar ataxia include neoplastic and demyelinating processes, certain drugs, barbiturates all may mimic cerebellitis. An infectious cause was foremost on the list of differentials given the acute nature of this girls presentation with prodromal symptoms and clinical findings consistent with a viral upper respiratory tract infection. One of the commonest infectious causes of cerebellar ataxia is varicella zoster (up to 0.1% of children develop cerebellar ataxia); however PCR tests on CSF for varicella zoster and herpes zoster viruses were negative. Other infectious considerations include Coxsackie virus, Diphtheria, Scarlet Fever, Parvovirus B19, Mumps, Measles, Rubella, Epstein-Barr and Rotavirus. This case is likely among a growing number of reports implicating influenza A (H1N1) as a causative agent for acute cerebellitis; influenza B positive during the 2010/2011 influenza season. Magnetic resonance imaging (MRI) of the brain confirmed findings consistent with cerebellitis.

We believe this is one of the first reported cases on dual influenza infection as a cause of childhood acute cerebellitis; a cause for acute cerebellitis has not been identified in up to 35% of previously reported cases. Acute cerebellitis may be under represented as a causative agent for acute cerebellitis; a cause for acute cerebellitis has not been identified in up to 35% of previously reported cases. Acute cerebellitis is one of the commonest causes of acute cerebellar dysfunction in children. Aetiologically it is usually an infectious, predominantly viral process, but can also occur post-vaccination.

Reassuringly, most patients affected by viral cerebellitis display complete recovery, however reports to date show a variety of clinical sequelae from complete resolution to development of severe morbidity; (fulminant cerebellitis with hydrocephalus. Pediatr Neurol 2009;41:200-3)

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References