Influenza – A Case Study

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A three-year-old girl with a past history of failure to thrive, who was up to date with her childhood vaccines, presented to The Royal Children’s Hospital emergency department with a five-day history of fever, coryzal symptoms and lethargy. Her general practitioner (GP) had commenced oral antibiotics a few days earlier but she had deteriorated in the preceding 24 hours with slurred speech and a fluctuating conscious state. She had no neck stiffness or light sensitivity. Her parents and older sister were also unwell with coryzal symptoms at the time. In the emergency department she was confirmed to have a fluctuating Glasgow Coma Scale (9 to 13), with increased tone and brisk reflexes throughout. Blood tests suggested a viral illness, and she had normal inflammatory markers. A CT scan of the brain did not identify a cause. Lumbar puncture was withheld, and she was commenced on intravenous antibiotics and acyclovir. She was then transferred to the intensive care unit for ongoing monitoring.

The following morning she had right-sided weakness, and an MRI demonstrated extensive focal necrotic and haemorrhagic changes in the deep white matter and spinal cord (C4–C5) in keeping with acute necrotising encephalomyelitis (ANE) (see Figure 1). A nasopharangeal aspirate was positive for influenza A (later confirmed as AH1pdm09 influenza virus, included in the 2013 Australian seasonal influenza vaccination). Her cerebrospinal fluid demonstrated a mildly elevated white cell count. Bacterial culture and respiratory virus PCR on the cerebrospinal fluid was negative.

Once the diagnosis of ANE (secondary to influenza A) was confirmed, the child commenced a seven-day course of antiviral medication (oseltamivir) and a three-day course of intravenous steroids (pulse methylprednisolone), followed by an oral weaning course of prednisolone. She remained an inpatient for three weeks, requiring physiotherapy and then ongoing care in the rehabilitation unit. She had short-term memory deficits but was able to communicate and mobilise independently by the time of discharge. Genetic predisposition studies are pending. Four months later she is a happy, interactive girl with some ongoing memory deficits and some right-sided weakness.

The whole family had this year’s seasonal influenza vaccine. Of all vaccine-preventable diseases, influenza is the leading cause of hospitalisation among Australian children under five years of age. However, it is not included in the routine Australian Immunisation Program, and vaccine uptake remains low, even among medically at-risk children.

Learning points

- Influenza can have serious consequences and be fatal in previously well children.
- Neurological complications of influenza A occur in up to 10 per cent of hospitalised children.\(^1\)

ANE is a rare complication of influenza A, but causes death or severe neurodisability in up to 70 per cent children.²

Morbidity and mortality associated with influenza underpin the need for universal influenza vaccination.

Early diagnosis and antiviral medication should be considered in hospitalised children and those children at high risk of complications.

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