Pertussis – A SAEFVIC Case Study*

Department of Health Newsletter: Issue 74 April 2015

A three week-old previously healthy term baby girl was taken to the local GP with a one-week history of coughing and post-tussive vomiting. Numerous episodes of central cyanosis and associated lethargy and respiratory distress had occurred after the coughing fits. Whilst at the GP she had a further episode of respiratory distress post coughing that required facial oxygen and tactile stimulation to recover. Triple zero was called and she was appropriately transferred to hospital. The day after her admission to hospital she experienced a cardiac arrest secondary to hypoxia and apnoeas following an extensive coughing episode. She was intubated and ventilated for a period of nine days and with a total hospital stay of 14 days.

Nasopharyngeal aspirate confirmed Bordetella Pertussis and a five-day course of Azithromycin was completed. Her chest x-ray showed pertussis pneumonia. Family history indicated that her three siblings were up to date with all vaccinations but her parents’ pertussis vaccination status was outdated and they were not aware of the recommendation for a pertussis-containing booster dose prior to, during or after the birth of their recent child. Both parents were given dTpa (Boostrix®) vaccine whilst their baby was in hospital. Medical review at three months of age showed the routine vaccination schedule had commenced and she was doing well. There were no ongoing coughing episodes and she was developmentally age appropriate.

**Pertussis**

Pertussis (whooping cough) is a respiratory infection caused by the bacterium *Bordetella pertussis* with an average incubation period of seven to 20 days. *B. pertussis* is highly infectious and most serious in infants under the age of six months. The maximum risk of infection and severe morbidity is before infants are old enough to have received at least two vaccine doses. Pertussis is spread by airborne respiratory droplets when an infected person sneezes, coughs or comes into direct contact with infected secretions; with adults being the main reservoir (approximately 50 per cent of cases) of infection because of their waning immunity acquired from vaccination or infection. Natural infection does not provide long-term protection and repeat infection can occur. Clinical symptoms vary from infants to adults; they may include paroxysms of coughing followed by a high pitched inspiratory ‘whoop’. The whoop is less likely to be heard in the very young infant, older children and adults. Infants may develop apnoeas and cyanosis post coughing fits and there may be associated post-tussive vomiting. Often no fever is reported. Adults generally report an irritating cough that can last for weeks. Undiagnosed and untreated pertussis is a source of infection transmission.

Hospitalisation may be required, particularly in infants less than six months of age or in the more severe cases where complications arise such as apnoeas, cyanosis, pneumonia, seizures or encephalopathy.

Pertussis is a vaccine-preventable disease that is free through the National Immunisation Program schedule for infants and children. Pertussis still remains highly prevalent in Australia and is the least well controlled of all vaccine-preventable diseases. In Victoria, the Department of Health over the period of January 2014–January 2015 recorded 4,606 cases, a 56 per cent increase in reports compared to the same period in 2013. A 38 per cent increase in cases in infants less than six months of age (55 cases in 2013 and 76 cases in 2014). This case was recruited by the Paediatric Active Enhanced Disease Surveillance (PAEDS) study at The Royal Children’s Hospital. PAEDS is a national, hospital-based active surveillance system monitoring childhood conditions of public health.
importance. It is funded by the Commonwealth and State Department of Health. It is run at the major paediatric hospitals in Victoria, NSW, QLD, SA and WA. The Victorian PAEDS site has had 17 cases of hospitalised pertussis in 2013, 26 in 2014 and seven in 2015 to date.

Lessons from this case

This case highlights the severity of pertussis in infants too young to be vaccinated. Without paediatric intensive care support this child may have died or had severe neurological morbidity. Maternal vaccination in the third trimester is one strategy that can minimise the risk of severe pertussis in young infants too young to have commenced their routine vaccines. For more information about maternal vaccination see the references below.

References and further reading


PAEDS – www.paeds.edu.au

Immunise Australia Program – immunise.health.gov.au

Royal Children’s Hospital – Clinical Practice Guidelines


National Centre for Immunisation Research and Surveillance – www.ncirs.edu.au

*Note: consent was obtained from the family for this case report