

Serious pertussis overlooked in infants

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Abstract. Two infants with life-threatening pertussis are presented in whom the diagnosis was delayed. A review of pertinent literature suggests that the diagnosis of pertussis in infants is frequently missed and therefore the morbidity and mortality from this disease is underestimated.

Key words: Pertussis – *Bordetella pertussis* – Sudden infant death

Introduction

Pertussis in early infancy is frequently a life-threatening illness and the presentation is likely to be atypical. This atypical illness may delay diagnosis or result in an incorrect diagnosis [2, 3, 7, 8]. We present two such cases.

Case reports

Case 1

This boy was well until 11 weeks of age when the mother noted that suddenly the baby stopped breathing and became cyanotic. The mother immediately put her finger in the baby's throat and the baby coughed, brought up some phlegm, started to breathe and again appeared to be well. Twenty minutes later in the presence of the family doctor, a similar episode occurred. At this time the baby lost consciousness and was limp. He was ventilated with oxygen by face mask, quickly regained consciousness and started to cry. Following this, a severe episode of coughing with post-tussive vomiting occurred and he was admitted to hospital.

Physical examination revealed an infant in no distress with a temperature of 37.5°C and a pulse of 90/min. The weight was 5360 g and the length 61 cm. The throat was erythematous. Auscultation of the chest and heart and the neurological examination were normal.

Laboratory examination disclosed a WBC count of 24,100/mm³ with 16% neutrophils, 77% lymphocytes and 7% monocytes, a haemoglobin of 10.3 g/dl and a platelet count of 119,000/mm³. The erythrocyte sedimentation rate was 7 at 1 h, the C-reactive protein was <0.3 mg/dl and the serum glucose was 119 mg/dl. Capillary blood gases, chest X-ray film, electroencephalogram, electrocar-

diogram and cardiac and cranial ultrasound examinations were normal.

After hospital admission, no other episodes of apnoea or cyanosis were observed, but over the subsequent 2 days the infant had coughing episodes which increased in frequency and intensity. A nasopharyngeal swab for *Bordetella pertussis* was obtained and this culture was subsequently positive. The infant was treated with erythromycin, moist air and mucolytics.

After 10 days both the intensity and frequency of coughing episodes decreased, the white blood cell count normalized and the patient remained afebrile. He was discharged on the 14th day. The source of illness was not determined.

Case 2

This neonate was the product of a normal pregnancy and vaginal delivery. He was discharged from the nursery at 2 days of age and was normal when routinely examined at 2 weeks of age. Three days later the patient was thought by the parents to be febrile, and a cough, clear rhinorrhoea and a faint rash appeared. On the following day he started vomiting with almost every feeding. He became lethargic with decreased urinary output and his respirations were laboured and rapid. On the 19th day of life the child was seen in the emergency room where he was thought to be septic. A blood culture, lumbar puncture and chest X-ray film were obtained, ampicillin and cefotaxime therapy was started and the child admitted to hospital. Examination showed a weight of 4.2 kg, a temperature of 37.8°C, a pulse rate of 160 and a respiratory rate of 60. The blood pressure was 90/50. The baby was sleepy but easily arousable and in moderate respiratory distress. Positive findings included clear rhinorrhoea, a slightly reddened throat and an occasional cough. There were moderate intercostal and subcostal retractions and expiratory grunting. A fine maculopapular rash was present on the chest and back.

Laboratory findings showed a WBC count of 36,100/mm³ with 10% segmented neutrophils, 6% band forms, 72% lymphocytes, 2% eosinophils and 8% monocytes but no other abnormalities. On the second day two generalized tonic-clonic seizures occurred which were treated with lorazepam and phenobarbital. Because of respiratory distress with severe oxygen desaturation the child was intubated. The serum sodium was 126 mmol/l, an electroencephalogram showed bitemporal seizure activity and CT scan of the head was normal.

On the 3rd hospital day a nasopharyngeal swab was obtained and *B. pertussis* was cultured from the specimen. Further history revealed that the mother and two of the patient's siblings had been ill for 1 week with fever and cough. Subsequent work-up revealed *B. pertussis* infection in all three. The child was extubated on the 13th hospital day. Throughout this hospital stay he had paroxysms

of coughing often associated with oxygen desaturation. After gradual improvement the child was discharged on the 36th hospital day.

Discussion

During the 1977–1980 epidemic of pertussis in the United Kingdom it was surprising, that the reported death rate due to pertussis did not increase. However, further analysis indicated that 9 out of 10 deaths due to pertussis were classified as due to other infectious respiratory illnesses [1]. In an analysis of the same epidemic Nicoll and Gardner [5] found evidence suggesting that pertussis deaths were also recorded as sudden infant death.

If our first patient had died, his death probably would have been classified as sudden infant death. In the second patient the diagnosis of pertussis was delayed until the 3rd hospital day, when an infectious disease consultation was requested specifically for the treatment of a suspected herpes simplex encephalitis. The consultant noted the WBC count, the cough in the patient and family members and made the clinical diagnosis of pertussis.

During the last decade the pertussis attack rate in the United States has increased from 0.5/100,000 in 1981 to 1.7/100,000 in 1989 without a concomitant increase in mortality [4]. This suggests that in the United States as in the United Kingdom pertussis deaths were being reported as due to other causes. The same is probably also true for the Federal Republic of Germany, where immuniza-

tion rates against pertussis are low, disease is epidemic, and less than 10 deaths due to pertussis per year suggest substantial underreporting [6].

It seems likely, that many unexplained severe illnesses and deaths in infants are due to pertussis. Physicians should be aware of this problem so that unnecessary therapy can be avoided and specific treatment and infection control practices carried out.

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