Spontaneous pneumothorax in an infant: an unusual complication of pertussis

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DESCRIPTION

A 6-week-old girl presented with non-paroxysmal cough for 2 weeks, and rapid breathing for the past 5 days. It was associated with occasional post-tussive vomiting but not fever or poor feeding.

On examination, she had tachypnoea with tracheal deviation to the left and decreased breath sounds on the right side of the chest, with hyper-resonance on percussion. Chest X-ray suggested right-sided pneumothorax with contralateral mediastinal shift (figure 1A). Blood gas analysis showed respiratory acidosis (pH 7.117, paCO_2 58.4 mmHg, paO_2 78.4 mmHg). She was administered oxygen by nasal prongs, and an intercostal drainage tube (ICDT) was inserted in the right second intercostal space (figure 1B). Following this, there was improvement in the clinical status and acidosis (pH 7.367, paCO_2 36.7, paO_2 116.7).

Haemogram showed leucocytosis (total leucocyte count: $55.34 \times 10^9/\text{L}$), and normal renal and liver function tests. Blood culture was sterile. PCR of the nasopharyngeal swab was positive for *Bordetella pertussis*, and oral azithromycin was given for 5 days. ICDT was removed by day 4 of hospitalization, and she was taken off oxygen by day 7. Repeat chest X-ray showed resolution of pneumothorax, and she was discharged in haemodynamically stable condition.

Pertussis or whooping cough is caused by *B. pertussis* and is often a severe illness in infancy. It is usually characterised by cough of more than 2 weeks' duration, which is usually paroxysmal with

post-tussive vomiting. In infants less than 3 months of age, apnoea and cyanosis may be additional features.

Rhinehart¹ reported a 34-year-old woman with pertussis with features of right-sided pneumothorax on clinical examination, confirmed on skiagraphy. It was concluded that it was a spontaneous rupture of a pre-existing pleural bleb of the right lung secondary to strain during paroxysmal coughing. Nicolai *et al*² analysed 19 infants with PCR-positive pertussis (median age 72 days), of whom 3 (15.8%) had respiratory complication in the form of pneumothorax.

Pneumothorax is a rarely reported complication of pertussis and is usually secondary to increased intrathoracic pressure during paroxysmal coughing. In our case, there were subtle clues, such as prolonged cough for more than 2 weeks and leucocytosis, and pertussis was confirmed by PCR.

Learning points

- ▶ Spontaneous pneumothorax in children is extremely rare.
- ▶ Pertussis should always be considered as a differential in an infant with prolonged cough and marked leucocytosis.
- ▶ Spontaneous pneumothorax is an under-reported complication of pertussis and is secondary to paroxysmal coughing.

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REFERENCES

- 1 Rhinehart BA. Spontaneous Pneumothorax: Report of a Case Apparently Following Whooping-Cough. *Radiology* 1926;7:253–4.
- 2 Nicolai A, Nenna R, Stefanelli P, *et al*. Bordetella pertussis in infants hospitalized for acute respiratory symptoms remains a concern. *BMC Infect Dis* 2013;13:526.

Figure 1 Serial chest X-rays showing right pneumothorax (A) and resolution after insertion of intercostal drainage tube (B).

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