Community acquired pneumonia in a three year old child: dealing with a difficult case

Pneumonia can be difficult to detect in young children. This case concerns a boy with pneumonia, who presented initially with upper respiratory tract infection.

Community acquired pneumonia (CAP) has an annual incidence of 34-40 per 1,000 children aged under five years in Europe and the US (Ostapchuk, et al 2004; British Thoracic Society, 2002). It is associated with fever and respiratory symptoms such as tachypnoea, dyspnoea and cough; there is often parenchymal involvement which is evident from symptoms or on a chest X-ray (Clark et al, 2007; Ostapchuk et al, 2004; BTS, 2002).

In younger children, presentation may mimic a different pathological process and clinical signs on chest auscultation may be absent, leading to a delayed diagnosis. Strepococcus pneumoniae is the most common bacteria causing pneumonia; however, viruses account for 14-35% cases of CAP (Ostapchuk, et al, 2004; BTS, 2002). A chest X-ray is advisable in a child <5 years of age with a temperature of >39ºC and where there are signs of respiratory distress (BTS, 2002). Early clinical suspicion and imaging is useful to diagnose CAP.

PRESENTATION

Harry (not his real name), aged three and previously healthy, presented with a four day history of fever ≥40ºC (despite receiving regular antipyretics), feeling generally unwell and with abdominal pain. Initial observations showed a temperature of 38.4ºC, pulse rate 138bpm, respiratory rate of 40 breaths per minute, saturations 97% in air and a central capillary refill time of two seconds.

He was unsettled during the examination, and had chest wall recessions and suspected bronchial breathing on the right side. Air entry was reported to be good bilaterally. The rest of the examination was unremarkable. The provisional diagnosis was of an upper respiratory tract infection and the need to rule out pneumonia was documented.

MANAGEMENT

The X-ray showed a right sided consolidation with a moderately large right pleural effusion (Fig 1). Harry’s blood inflammatory markers were raised. He had serum sodium of 129mmol/L, indicating low antidiuretic hormone secretion – this is a recognised complication of pneumonia and requires fluid input to be restricted (BTS, 2002). He was started on IV cefuroxime at a high dose. Harry’s temperature kept spiking over the next few days and regular antipyretics were continued, along with IV antibiotics. He had saturations of >95% in air and needed supplemental oxygen only while asleep on the third night after admission.

In view of the temperature spikes, a chest ultrasound scan was organised, which showed consolidation in the right lower lobe and a 3cm effusion on the right side. His inflammatory markers further increased over the next few days, and serum sodium normalised by day six in the hospital.

A discussion with the respiratory team in the regional centre was initiated, which led to a decision to insert a chest drain if necessary. Harry was managed in the high dependency area in his local hospital. His inflammatory markers improved and antibiotics helped to improve his symptoms.

PROGRESS

The IV cefuroxime was continued for 15 days and oral azithromycin was discontinued after a five day course. Harry’s temperature spikes settled after day 14 of antibiotics. A further chest ultrasound scan showed that the pleural effusion was resolving. The blood culture was negative after six days of incubation. He needed several days to recover and had suffered significant short term morbidity. Harry stayed in hospital for 12 days. He was reported to be doing well six weeks later and a repeat chest X-ray then showed total resolution of the plemonic changes. He was discharged to general practice.

CONCLUSION

This case illustrates the importance of being aware of the difficulties in detection of pneumonias in younger children. A thorough history, repeat clinical examinations and imaging may help in early diagnosis and prevention of significant morbidity.

PRACTICE POINTS

- Consider pneumonia in children with high fever and respiratory symptoms (Clark et al, 2007; Ostapchuk et al, 2004; BTS, 2002).
- Younger children can present with no clinical signs and symptoms of pneumonia.
- An elevated paediatric early warning score should prompt assessments and imaging.
- Pneumonia with raised inflammatory markers and a persistent fever should raise the suspicion of a pleural effusion in children (BTS, 2002).
- IV antibiotics should be used in children with severe symptoms and where oral antibiotics are not tolerated, such as in vomiting (BTS, 2002).

REFERENCES

