case study: asthma

Dr Claire Purcell and Dr Basil Elnazar look at a case of recurrent cough and wheeze in a young child and how it illustrates the need for consideration of alternatives to asthma

Case report
A two-year-old girl presented to the A&E Department of her local hospital with cough and wheeze on three occasions over a two-month time period. She had a background history of asthma since arriving in Ireland four months previously and was on ongoing bronchodilator treatment from her GP. She was admitted on several occasions to her local hospital with history of cough and wheeze, which showed some improvement with bronchodilator therapy and oral steroids; however her symptoms recurred within a very short time, despite adequate anti-inflammatory therapy. The family history was non-contributory and her birth history was unremarkable. Of note, these episodes were not associated with any febrile illnesses and there was no objective evidence of infection. She was admitted for further assessment.

On admission she was wheezy and persistent decreased air entry to her right mid-zone and base, her baseline saturations were 93-95% in room air. There was no clubbing noted and she was a thriving, well nourished girl.

Initial chest x-ray (figure 1) was unremarkable, although subsequent x-rays suggested some slight hyperlucency in the right lung field with hyperinflation. CT thorax was arranged (figure 2) and showed marked hyperinflation on the right lung.

At this stage the patient was referred to our service for a bronchoscopy (figure 3). This revealed the presence of a foreign body obstructing her right mainstem bronchus, just below the level of the carina. The foreign body (a peanut) was endoscopically removed. The child’s symptoms resolved and she was discharged home well a few days later.

Dilemma
Wheeze is a hugely common symptom presenting to GP and A&E services around the country, no time more so than in the forthcoming few months, as back-to-school season rapidly approaches. It is typically a time when children with asthma, who were very well over the summer months and possibly not as compliant with their inhaler therapies as usual, are exposed to environmental or viral URI triggers. However, as this case demonstrates, it is important to keep an open mind and not jump to the obvious diagnosis, especially when faced with wheeze that does not respond to bronchodilator treatment.

There is a vast array of medical and surgical pathologies to consider when investigating a child with persistent wheeze (see Table 1). As with all medical assessments, the history of the wheeze and its associations is key. Attention to the nature of the respiratory sounds that are present, spirometry, exercise testing and blood-gas measurement can provide useful data to sort out the various causes and avoid inappropriate treatment of these pseudo-asthma clinical manifestations.

Foreign body
Children put things up their noses and into their mouths; this is a universally known phenomenon and foreign body aspiration (FBA) should be suspected as a possible cause of recurrent cough and wheeze in all children between the ages of six months and six years. In our case, the mother was adamant that the child could not have put anything in her mouth and did not witness any choking episode, yet a peanut was removed from the right main-stem bronchus several months later. A witnessed choking event is the single most important historical information to make an early diagnosis of FBA.

Baseline investigations, such as CXRs, are often unhelpful as they are usually normal. CT scans can, on occasion, be helpful in identifying a focal area of bronchiectasis, which often results secondary to the foreign body. Bronchoscopy is the gold standard in diagnosis and treatment.

Cough
Also known as ‘habitual cough’, it is an especially troublesome diagnosis as it is generally one of exclusion, and is often only reached after exhaustive investigations are undertaken to rule out a pathological cause.

Typically, it is the parent’s family and friends that find the symptom the most troublesome, and the child him/herself is often not that bothered by the recurrent cough. Often, the only clue from the history is the absence of coughing at night when the patient is asleep. The patient finally makes their way to a respiratory paediatrician, only to be told that there is very little medically to be done.

Treatment options sometimes include cough suppressants, and although this is often only a short-term solution, it can break the cycle where the recurrent cough behaviour is not well established. However this is not a treatment we advocate. Parents often dismay at the diagnosis of psychogenic cough as they feel it is an indirect criticism of their child, who is ‘putting it on’. Similarly, the physician can feel somewhat redundant.

Other treatments advocated include psychological therapies such as behavioural modification, although this can be a slow process.

One such case in the literature involved using classical conditioning to breathing in air and the subsequent development of a nervous habit. Treatment was conducted over six sessions and initially involved desensitisation to increasing amounts of air flow. A second phase involved strengthening awareness and control over coughing at home using self-management and positive practice procedures.

Unfortunately, access to these services is often very limited, especially in peripheral units, as all hospitals are being forced to tighten their collective belts.

On occasion, admission to hospital for observation can be useful. By observing that the child does not cough at night when asleep, (only when the pathologies outlined previously have been eliminated as possible causes) we can be sure of the diagnosis.

A hospital stay can also be useful in identifying certain habit behaviours, not only of the child but of the parent as well. Smoking is a habit that not all parents will confess to and the parent that is observed sneezing off the wards can provide a vital clue to the aetiology of recurrent respiratory symptoms. There is a well-documented association between cough, wheeze and parental smoking.

Conclusion
Recurrent and refractory wheeze in children needs to be approached in a methodical manner, ruling out the common causes before detailed and expensive investigations are undertaken. Foreign body aspiration should be considered in all toddlers and especially in children with unilateral chest signs.

Dr Claire Purcell, SpR in Paediatric Respiratory Medicine, Dr Basil Elnazar, Consultant Respiratory Paediatrician, National Children’s Hospital, AMNCH, Dublin 24