Persistent Bacterial Bronchitis

The true incidence of persistent, as opposed to recurrent, cough in childhood is unknown. Epidemiological studies have suggested that the prevalence in school age children is in the region of 7-10%. The cause for a persistent cough lasting more than 4-6 weeks has not been explored in detail. Over the past 5 years, a number of studies have started to explore this problem and have identified persistent bacterial bronchitis as the most common cause seen in secondary care. Clearly, in primary care the situation is likely to be different with asthma, ‘post viral’ cough and unrecognised whooping cough being more prevalent than amongst those seen in secondary care.

It is clear from the literature that in the past ‘bronchiectasis’ resulting from persistent bacterial bronchitis was far more prevalent than it is today and the introduction of antibiotics in the 50s and 60s lead to a dramatic reduction in the amount of hospitalisation due to bronchiectasis. The widespread use of antibiotics probably lead to this condition largely being forgotten becoming a so called “orphan” disease but unfortunately it is, again, becoming more common quite possibly due to significant reduction in the use of antibiotic prescribing that has taken place over the past decade. Bronchiectasis is a pathological, radiological term and should not be used to describe a disease. Many children with bronchiectasis evident on a CT scan are completely asymptomatic for prolonged periods and so do not experience disease for most of the time while many with a persistent bacterial bronchitis suffer significant morbidity particularly if the condition is unrecognised or mis-diagnosed. The disease, itself, appears to be a persistent colonisation of the airways with pathogenic organisms. The same organisms almost certainly are present in normal airways on a regular basis but in those without an underlying issue are cleared or at least reduced to non-pathogenic quantities. The vicious circle hypothesis of bronchiectasis implies ongoing infection usually secondary to impaired mucociliary clearance which may be due to a wide range of problems such as cystic fibrosis, primary ciliary dyskinesia but far more common lower respiratory tract infections and, indeed, airways problems such as tracheomalacia.
Many have struggled to accept the concept of a persistent bacterial bronchitis and often refer to these children as having recurrent “chest infections”, the chest infections being exacerbations usually precipitated by an intercurrent viral infection. Whilst not proven, a much more robust model would be for a persistent biofilm type disease as observed in chronic otitis media with exacerbations being associated with release of planktonic forms of the organisms. In this model, persistence of infection with ongoing inflammation prevents recovery of the airways and therefore is associated with either failure to improve or progressive deterioration over time which, eventually, after months in aggressive forms to decades in the less aggressive forms manifests itself as bronchiectasis evident on a CT scan. This model would suggest that ‘bronchiectasis’ should be considered to be a preventable form of damage to conducting airways in the same way that we try to prevent myocardial infarction in those with athermanous disease of the arteries – the infarct is not the disease but the result of the disease.

The pattern of symptoms reported by parents with a chronic ongoing cough between exacerbations would be consistent with the above model. The children typically cough when changing posture such as lying down when going to bed and first thing in the morning though it can be through the night. In the day the coughing is frequently triggered by exercise and may be so severe that the child appears ‘short of breath’ – gasping to catch their breath.

A wet or smokers cough simply suggests secretions within the airways and this is associated with significant exacerbations of asthma and, indeed, in some occasions chronic poorly controlled asthma. Therefore, in order to make a diagnosis a history highly suggestive of the condition together with unequivocal response to treatment is required in the same way that a positive diagnosis of asthma requires a similar unequivocal response. Such a response does not include coughing less or sleeping a bit better, it involves the report of a child being transformed – a new child.

The great challenge for respiratory medicine at present is trying to identify those children who require antibiotics at an early stage before the bio films have been established as it can, once established, be very difficult to irradiate. However, the aim in all children should be cure with complete resolution of the cough and the ability to withstand viral infections without exacerbations.