Lung Sounds

Doctors in general, and respiratory physicians in particular, have placed great store on the use of a stethoscope in the diagnosis respiratory problems since its invention in the early part of C19th. However, despite the ubiquitous presence of stethoscopes there has been considerable confusion regarding nomenclature and the causes and implications of additional breath sounds. Lack of clarity and lack of careful education results in the misuse of terms to describe respiratory noises and, indeed, an unfounded belief that if respiratory sounds appear to be normal then there is no significant lower respiratory tract problem. Failure to use terms with precision greatly handicaps clinical care of patients and renders much of the epidemiology undertaken in the past 2 decades worthless.

By far the most common reported respiratory sound is wheeze which is typically expiratory but, on occasions can be inspiratory. This defining feature is that it has a musical quality and, indeed, a classic wheeze when subject to breath sound analysis shows harmonics super imposed on a normal breath sound. It is a continuous sound through much of the expiratory breath. The presence of wheeze suggests flow limitation with oscillations in the large conducting airways acting as a mechanism of dissipating energy in the system that does not contribute to airflow. It does not give any indication of the cause of the airflow which maybe due to smooth muscle contraction as seen in asthmatic subjects or mucosal oedema and airways secretions as seen in wheezy bronchitis and asthma exacerbations. It should also be noted that it also tends to imply a change to base line as many patients with poor lung function due to diseases such as CF, COPD or poorly controlled asthma do not wheeze and presumably they have adapted different patterns of breathing.

Respiratory noise commonly seen in young children and those with airways conditions involving excessive secretions has been termed a ruttle based on local usage of the term in the North-Midlands of UK. This is a coarse, harsh, non-musical sound that can be often felt on the chest. This is often described as a transmitted sound, suggesting that it comes from the pharynx. However, the sound is different in origin to the rattle observed in patients with neuromuscular problems such as strokes, in whom secretions pool in the oropharynx. These sounds are common in infants upto 18 months of age and if they occur alone without wheeze or cough are probably benign probably representing excessive secretions within the conducting airways. Crepitations are discontinuous sounds thought to be due to snapping of alveoli units and hence is discontinuous.
Epidemiological studies, such as the Isaac questionnaire, based on “does your child have a wheeze or whistling sound?” are inevitably going to grossly over-estimate the incidence of wheeze and, on an individual basis, misuse of the term by both doctors and parents who are trying to be helpful is likely to lead to over-diagnosis and/or mis-diagnosis of asthma.

Studies in this area showing the inability of doctors to agree about basic clinical terms highlights the need for a central web-based repository of definitive breath sounds as is being organised by Kostas Priftis through the ERS.