Infant Lung Function Testing – Moving into the Clinic Now?

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The papers by Wildhaber et al. [1] and Lagerstrand et al. [2] in this issue of *Respiration* indicate that assessment of airway function may soon become a routine procedure for the evaluation of infants with chest disease and the assessment of response to therapy. Lung function tests for adults were developed to a large extent during the 1950s and then standardized during the next 2 decades. They have become well established in our routine evaluation and care of adults with asthma or COPD, and also in school children with asthma, a process that has been strongly promoted by the international guidelines for these conditions. The development of lung function tests for infants started much later, mainly during the 1970s, and through the efforts of pioneers such as Mary-Ellen Wohl [3–5]. During the 1990s, many of these methods have become standardized through international collaboration in task forces set up by the American Thoracic Society and the European Respiratory Society [6]. Those who have led this work, e.g. Prof. Janet Stocks [7], have not only been skilled in their own research but also in diplomacy, and the process has been remarkably quick and successful. Normative data for several of the methods are now being published [8], and several biomedical engineering companies have recently marketed equipment with specifications according to the guidelines given by the international task forces. This is a necessity for wide application of these methods in the clinic. Furthermore, this has opened the door for collaborative studies and multicenter drug trials in infants with airway disease. The availability of these methods must, however, be matched with suitable training courses for the staff involved. Providing such courses is a responsibility for the experts who have promoted the widespread use of the methods and the companies selling the lung function testing systems. Hopefully, the availability of the methods will make it possible to better characterize lung disease in individual infants and to assess their response to therapy objectively. Currently, this is accomplished to a large extent through parent’s reporting and doctor’s clinical assessment [1].

It is obvious from the two papers in this issue of *Respiration* [1, 2] that measuring single parameters of airway function such as forced expiratory volumes (FEVt) [1] or maximum respiratory flow at functional residual capacity (V˙max FRC) [1, 2] may not give the investigator a full picture of the airway function of the infant. It appears from the paper by Wildhaber et al. [1] that measuring FEVt using the raised-volume rapid thoracic compression technique may be more informative than V˙max FRC obtained with the tidal thoracic compression technique. The two parameters may, however, provide complementary information. As suggested in both papers, assessment of the end-expiratory level may be critical for correct interpretation of the response of V˙max FRC after clinical improvement from wheezy disorder [1] or after β2-agonist therapy [1, 2]. FRC measurements can be done by whole-body plethysmography or by inert gas washout, both methods being commercially available today. It is likely that infant lung function testing for clinical purposes will be estab-
lished primarily in larger centers and departments over the next few years due to the high cost of buying complete recording systems compared to adult spirometers, and for the cost of training the staff. In addition, most methods require sedation of the infant during the investigation. The forthcoming challenges for those involved in this field will be to develop methods that are cheap to buy and simple to use, still providing the essential information. Optimally, these methods should be applicable in infants when they are awake. When this has been achieved infant lung function testing may even move out of the clinic.

References


