Evaluation of a shortened version of the dosimeter method for bronchoprovocation with adenosine-5'-monophosphate (AMP)


We evaluated a shortened protocol for AMP-bronchoprovocation (quadrupling doses) by comparison with the standard dosimeter protocol (doubling doses). In addition, reproducibility of the shortened protocol was determined.

Volunteers underwent AMP-bronchoprovocation on three occasions: once by the standard protocol, once by the shortened protocol and once by a protocol with quadrupling doses. Both the standard and the shortened protocol were tested in 41 subjects. Six out of them had a PD20 (0.05-30.48 mg) by the standard protocol; five had a PD20 in both standard and shortened protocol. The shortened protocol was tested in 42 subjects. Ten out of them had a PD20 (0.01-30.70 mg) only once. In 26 subjects the shortened protocol was tested twice: eight subjects had a PD20 both times; two reacted only once.

Reproducibility of the shortened protocol is good (Gappa = 0.86; 95% C.I. 0.66-1.05). Agreement between the standard and the shortened protocol is moderate (Kappa = 0.53; 95% C.I. 0.16-0.90), due to the larger number of subjects with a PD20 in the shortened protocol (n=9) compared to the standard protocol (n=6). In those having a PD20 in both the standard as well as the shortened protocol (n=5) average PD20 is somewhat lower in the standard protocol. The mean difference in doubling dose (log2PD20) is 0.14 (95% C.I. : -1.33-1.61).

Although the shortened protocol has a greater sensitivity, the difference in PD20 between standard and shortened protocol is within three dose-steps. Thus, the shortened protocol is an accurate tool in epidemiological surveys.


Cross-sectional and longitudinal modeling of FEV1 and FVC in adolescents


The accurate prediction of ventilatory function development of an individual during adolescence is hampered by the large inter-individual variation in pubertal growth patterns, and the phase difference between growth of ventilatory function and standing height. Neither is accounted for in the commonly used cross-sectional reference equations which makes these equations less efficient for monitoring growth and ventilatory function. We studied if adolescent development of FVC and FEV1 could be more adequately modelled using longitudinal data and methods, by fitting an autoregressive model.

In-transformed FVC and FEV1 were predicted from the previous FVC or FEV1 measurement, age and gender, and standing height. We compared this model to a power model that had height as the only predictor and that was fitted to a cross-sectional selection from the longitudinal data. The data were obtained in a longitudinal survey of 779 Dutch adolescents, aged 13.5 to 19.5 years. Measurements were made between 1975 and 1989, with an average interval of approximately 0.5 years. Data of 279 boys and 58 girls who had never had respiratory symptoms and who had never smoked were selected for analysis. The residual standard deviations of the cross-sectional model were approximately 2.5 times larger than those from the longitudinal model. The adequacy of the longitudinal and the cross-sectional model to follow the pubertal growth spurt was studied from the data of a small selection of approximately 60 boys of whom the peak growth ages of FVC and/or FEV1 could be estimated. The residuals from the power model at fixed time intervals from the peak growth ages show a clear trend in that ventilatory function was underestimated by about 10% during the early growth spurt and underestimated by 5% at the end of the spurt. The residuals of the autoregressive model did not show a clear trend; deviations from zero were in the order of 2% to 3% on average. Although the theory behind autoregressive models is complicated, especially when these models are applied to mixed longitudinal data (as in this study), and several issues still need to be resolved, the results indicate that these models offer a substantial improvement in modelling and hence predicting the complex growth of ventilatory function during adolescence.

The Spanish version of the St. George's Respiratory Questionnaire (SGRQ): Adaptation and Preliminary Validity


We describe the adaptation into Spanish of the St George's Respiratory Questionnaire (SGRQ), a 76-item questionnaire developed by Jones et al. (1991) covering three domains of health in airways disease patients: Symptoms, Activity, and Impacts. For the adaptation, forward and back translation method by bilinguals was used, together with panels of professionals and patients. After testing for feasibility and comprehension, the version was presented to 321 male COPD patients with a wide range of disease severity, to test its reliability and validity.

The final version was acceptable and easy to understand by Spanish patients. Cronbach's alpha reliability coefficient was 0.94 for the overall scale (0.72 for Symptoms, 0.89 for Activity, and 0.89 for Impacts). Correlation coefficients between the overall score and dyspnea and %FEV1 were 0.59 and -0.45, respectively. Dyspnea and impact were higher with Activity and Impacts (r=0.57 and r=0.56, respectively; P<0.001), and correlation with %FEV1 was highest for Activity (r=0.53; P<0.001). These correlations were higher than those observed among the clinical variables and the Nottingham Health Profile, a generic measure of health and quality of life.

The results of the study suggest that the Spanish version of the SGRQ is conceptually equivalent to the original, and is similarly reliable and valid. It may thus be used in Spanish and international studies in respiratory patients.

Funded by the Fondo de Investigación Sanitaria (FIS) (N. 91/0529).