Impulse oscillometry in preschool children with persistent asthma can predict spirometry at school age.

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Abstract

Background: Lung function in children with persistent asthma may be impaired during preschool and school ages. The aim of this study was to describe if some preschool IOS parameters are related to spirometry alterations on reaching school age. **Methods**: 66 children under six years old diagnosed with persistent asthma were studied prospectively with IOS during their preschool years and spirometry at school age. **Results:** The mean age was 4.9 years at the first evaluation and 7.9 years at the second evaluation, and 59.1% were male. During preschool, R5, Fres, AX, and D5-20 were found to have diagnostic accuracy (AUC>0.7) for predicting altered spirometry during school age (defined as FEV1 and/or FEV/FVC and/or FVC values below the lower limit of normality according to Quanjer predictive values). AX, D5-20, and R5 had the best LR+ to increase the probability of altered spirometry (50, 10, and 7.1, respectively). R5 was the best IOS parameter for discriminating bronchodilator response (BDR) in schoolchildren (AUC=0.7, LR+ = 3.7). Abnormal IOS increases the risk of having abnormal spirometry (RR=12.7, p= 0.002). This risk is even higher in atopic patients (RR= 21, p=0.003). **Conclusion:** The findings of this study indicate that some IOS parameters between 3 and 5 years of age are useful for predicting abnormal spirometry and BDR at school age.

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