[PA3135] Measuring lung function in asthmatic children: A spirometry and forced oscillation technique (FOT) comparison

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Background: Spirometry is the most common pulmonary function test used in asthma diagnosing. However, it requires good patient co-operation. FOT has gained increasing attention for the measurement of pulmonary function in children because it is performed at steady state breathing.
Aim: To compare spirometry and FOT in order to discriminate severity of asthma according to GINA.
Methods: Spirometry and FOT were performed in 176 out-patient asthmatic children (5-16 year), 100 (57%) with naïve Persistent Asthma (PA) and 76 (43%) with Intermittent Asthma (IA), consecutively enrolled at the IBIM pediatric clinic. Two principal component analyses (PCA) were performed, the first (PCA1) based on FEV_1%pred, FVC%pred, FEV_1/FVC, $FEF_{25-75\%}$%pred and the second (PCA2) based on resistance (R_{rs}) and reactance (X_{rs}) at 4, 6, 8 and 10 Hz. Classification Tree (CT) was applied to discriminate PA and IA. The significance level was 5% and the analysis were performed using R (3.1.0).
Results: Statistically significant differences of mean values were found for FEV_1 and $R_{rs}8$ in PA *vs* IA [FEV_1%pred PA: 97.35±18.88 *vs* IA: 103.24±10.76, p=0.01; $R_{rs}8$ PA: 7.25±2.23 *vs* IA: 6.03±2.63, p=0.001].Based on explained percentage of variance (≥70%), two principal components were selected, in both PCAs. Based on the scores from PCA1 and PCA2, two classification trees were built. CTs showed good results in discriminating asthma severity groups, providing a misclassification rate very close and not statistically different (27.8% *vs* 26%, p=0.72).
Conclusions: FOT may discriminate intermittent and persistent asthmatics, so it could be used in patients who are not able to perform spirometry.

Session: Poster Discussion: Highlights in primary ciliary dyskinesia and asthma in childhood
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