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Title: Characterization of bronchodilator response by spirometry and plethismography

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Body: Background: The bronchodilator response criterion is defined by ATS/ERS as an increase of FEV1 and/or FVC ≥ 12% and 200 mL. However, there are other criteria that should be evaluated in order to better characterize the bronchodilator response Objectives: to determine lung function (LF) parameters obtained by spirometry and plethysmography, that have significant changes with the administration of bronchodilator; to quantify changes of LF parameters between pre and post bronchodilator; to characterize the response to bronchodilator according to different criteria. Methods: We studied 52 consecutive subjects who performed LF tests, in which was detected airway obstruction with subsequent administration of bronchodilator. The sample was divided in accordance with the presence or absence of pulmonary hyperinflation (PL). Results: All parameters increased or reduced after administration of the bronchodilator ($p<0.05$). Raw and the FEF's had the largest percentage of differences between the pre and post bronchodilator. For the totality of the sample, the criteria which were able to detect the largest number of subjects with a positive response to the bronchodilator were the increase of $FEF_{25-75\%}$≥10% (63.5%), $FEF_{25-75\%}$≥20% (46.1%), IC≥10% (34.6%) and the reduction of Raw≥10% (32.7%). For the group without PL the best criterion was the increase of $FEF_{25-75\%}$≥10% (62.2%) and in the group with PL was the increase in $FEF_{25-75\%}$ ≥10% (66.7%) and the reduction of RV≥10% (66.7%). Conclusion: This study couldn't define a single parameter that was considered "the best" to characterize a positive bronchodilator response, but suggested a combination of several parameters for a correct characterization of airway reversibility.