

TIME TO MAXIMAL RESPONSE TO BRONCHODILATORS IN CHILDREN

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Introduction: Response to bronchodilators (BD) is routinely used in the diagnosis and/or management of asthma. Underestimation of the maximal BD response may alter clinical management and therefore the time interval between administration and performance of post-BD lung function testing is critical. The time course of the BD response in children is not well described. We aimed to document the time course of changes in lung function, after the administration of salbutamol in asthmatic children.

Methods: Baseline spirometry was performed as per ATS guidelines. Salbutamol (600 µg) was administered via a pMDI and large volume spacer. Post-BD spirometry testing was performed at 0, 5, 10, 15, 20, 40, 60 and 90 minutes.

Results: 18 were enrolled in the study, 2 subjects did not demonstrate a BD response on the day (change in FEV1 < 12% or 200mL) and were excluded from further analysis. FEV1, FVC and FEF25-75 significantly increased in both relative (% change from baseline) and absolute responses following salbutamol inhalation ($p < 0.001$), with the exception of absolute increases in FVC ($p = 0.069$). The group response, in absolute and relative terms, in FEV1 was significantly higher at 15 (0.34: 0.23-0.42L (median: 25-75th centiles) and 12.8: 9.9-16.0%, respectively) and 20 minutes (0.29: 0.25-0.56L and 13.8: 8.1-21.6%,) than at 0 (0.24: 0.15-0.34L and 9.3: 7.1-12.0%) and 10 minutes (0.26: 0.19-0.38L and 11.1: 6.2-16.9%) post BD inhalation ($p < 0.05$).

Discussion: As a group, peak increase in FEV1 and FVC occurred at 15 to 20 minutes after salbutamol. These data suggest a minimal interval of 15 minutes, prior to re-testing spirometry, is required to document the maximal response to bronchodilators in asthmatic children.

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