

Maximal expiratory flow assessment in children's exercise-induced asthma diagnosis

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Abstract

Background. Exercise-induced asthma (EIA) is an attack of asthma that is provoked following strenuous exercises. Both clinical and laboratory observations indicate that short (4 to 10 min intense periods of exercise) are the most likely to trigger asthmatic symptoms. To diagnose EIA in children, a fall of more than 15% in forced expiratory volume in one second (FEV1) after a strenuous exercise or a fall of more than 35% of forced expiratory flow between 25 and 75% of the forced vital capacity (FEF25-75) are commonly used.

Aims. The aim of this study was to distinguish EIA from non-EIA children by means of FEV1 and FEF25-75 changes measured after a strenuous exercise.

Methods. Thirty-six prepubescent asthmatics participated in this study. After an 8-minute exercise at a constant workload, the children were divided into EIA- and non-EIA groups, considering separately on the one hand the fall in FEV1 and on the other hand the fall in FEF25-75.

Results. With the FEV1 method, 15 children (41.6%) had EIA symptoms and 21 children had not. When using the FEF25-75 method, 14 children (38.8%) had symptoms of EIA and 22 had not. Some children were not in the same subgroup regarding the two aforementioned definitions. A discriminatory analysis done on FEV1 and FEF25-75 before and after exercise showed that, respectively 8.33% and 2.78% of the children did not remain in the initial subgroup. This might be explained by the characteristics of the FEF25-75 investigation. FEF25-75 is thought to reflect the status of the small bronchi and is, therefore, not dependent on goodwill.

Conclusions. The results of this study suggest that FEF25-75 appears to be a better discriminating parameter in children's EIA diagnosis than FEV1.

Keywords: children, exercise-induced asthma, forced expiratory flow volume.