

PEDIATRIC ASTHMA

Perception of Dyspnea in Prepubescent Children with Mild Intermittent Asthma: Is there Any Gender Difference?

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Evaluating a small number of asthmatic patients, Chhabra and Chhabra (1) reported that the females were more likely to have a greater perception of dyspnea as well as a lower asthma control and a poorer quality of life than the males. In addition, they showed that female gender and poorer quality of life were independent predictors of increased perception of dyspnea in their asthmatic population (1). This study had some limitations, also recognized by authors, but the findings were interesting and may be clinically relevant as there are few reports investigating the possible gender difference about asthma symptom perception, which may vary according to a variety of factors, including disease severity and patients' age. In this regard, we recently evaluated a cohort of 150 Italian asthmatic children (97 males, median age 9.79 years). Inclusion criteria were (a) first asthma diagnosis; (b) atopy confirmed by skin prick test positivity; (c) ability to perform spirometry, with reproducible flow/volume curves (2); and (d) mild intermittent disease, treated only with bronchodilators on demand. We selected children with mild intermittent asthma because (a) about 70–80% of new diagnosed cases belong to this severity class and (b) we wanted to avoid any interference with "controller medications." In addition, most asthmatic patients referred to our unit are prepubescent. Therefore, children had to be prepubescent in this study as we want to evaluate whether there was a possible gender difference in asthma prior to sexual maturation. Pulmonary function tests results were compared with reference values (3) and reversibility post-bronchodilation testing was considered positive when the forced expiratory volume in 1 second (FEV₁) values increased $\geq 12\%$ after inhalation of 400 μg

albuterol. Dyspnea perception was assessed by a Visual Analogue Scale (VAS; 0–10; 0 = worst respiration; 10 = optimal respiration). Data were reported as median (md) and first and third quartile (IQR). Wilcoxon and Spearman tests were used. A logistic regression model was applied to predict reversibility.

Forced vital capacity (FVC), FEV₁, and forced expiratory flow over the middle half of the FVC values, at baseline, were within normal limits in all children, with no differences between males and females (Table 1). A similar response to salbutamol was observed as the post-BD FEV₁ values were not different in males and females. Despite the "mildness" of the disease, pre-BD VAS values were <9.5 in all patients, with no gender-related differences. A significant relationship between FEV₁ and VAS values was demonstrated only in females at baseline (p -value = .0001, ρ = 0.536). On the contrary, the gender-dependent difference was not detectable after BD, as the correlation was significant in both males (p -value = .0407, ρ = 0.230) and females (p -value = .0039, ρ = 0.456). Finally, the predictive model for reversibility was also significant at comparable levels in both males (p = .0371) and females (p = .321).

These results demonstrated a good reliability of VAS assessment of respiration perception in children with mild intermittent asthma, with minor (if any) difference gender-dependent. It is possible that these findings, which might be related to the disease mildness and to the prepubescent age, could not be confirmed in persistent asthma and/or in the adolescence, when sexual maturation induces a more substantial, gender-related differentiation in behavior between males and females.

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TABLE 1.—Spirometric parameters before and after bronchodilation (BD) test and Visual Analogue Scale (VAS) results in males and females.

	Males (97)	Females (53)	<i>P</i> -value
FEF ₂₅₋₇₅	102 (88–126)	110 (92–127.5)	.2282
FVC	98 (88–108)	98 (90.75–108.25)	.8395
FEV ₁ pre-BD	105 (99–115)	106 (95.75–114)	.6498
FEV ₁ post-BD	113 (104.5–121)	109 (100–116.75)	.2712
VAS pre-BD	7.5 (6–8.55)	8.2 (5.88–9.5)	.2006
VAS post-BD	8.1 (7.05–10)	9 (7.15–10)	.7157

Notes: Values are represented as md (IQR). FEF₂₅₋₇₅, forced expiratory flow over the middle half of the FVC.

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