

Is Exercise-Induced Bronchoconstriction Exercise-Induced Asthma?

The article in this issue of *RESPIRATORY CARE* by Burnett et al¹ reports that 34 of 80 college athletes had exercise-induced bronchoconstriction (EIB), most in the absence of symptoms. The authors further suggest that these athletes are at risk and that the identification of those with EIB may prevent morbidity and mortality. The implication is that the presence of EIB is evidence for asthma. But is the presence of EIB in the absence of exercise-induced dyspnea or other symptoms of asthma the same as exercise-induced asthma?

EIB in the normal population and in athletes has been described previously.² The absence of apparent dyspnea associated with EIB was also seen when EIB was observed in children with rhinitis but no asthma. Others have reported as high as 40% prevalence of EIB associated with only allergic rhinitis.³ EIB was also reported in children with decreased levels of physical activity and no clinical evidence of asthma.⁴

But is EIB of clinical importance in the absence of dyspnea? Is a >10% decrease in FEV₁ subsequent to exercise in the absence of clinical dyspnea sufficient for the diagnosis of exercise-induced asthma? The presence of EIB in a child without symptoms of asthma may be, as suggested by Burnett et al,¹ predictive that some minority will eventually develop symptoms of asthma, but most apparently will not. This study as well as most previous studies relating to EIB and asthma symptoms are cross-sectional. The higher incidence of EIB compared with symptoms in previous studies calls for longitudinal studies to determine a better or possibly more stringent criteria for EIB that might include higher cutoff value in FEV₁ change, reproducibility of symptoms during testing, and reversibility with bronchodilators to help identify subjects at true risk of exercise-induced asthma and in need of attention and/or treatment.

We have previously reported⁵ our experience with exercise studies in 140 children examined because of a complaint of dyspnea on exertion. Most had been previously diagnosed and/or treated as having asthma by their primary care physician, but their negative response to albuterol before exercise was inconsistent with an asthma diagnosis. Despite reproducing their symptom of dyspnea on exertion, only 11 of those 140 had EIB. None of the others, most of whom were high school athletes, had EIB or other

evidence of asthma. Their reproduced dyspnea on exertion was associated with various physiological findings. The difference in prevalence of EIB between our study⁵ and other

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reports of EIB in subjects without asthma, including that of Burnett et al,¹ is probably related to the more stringent criteria we used to define positive EIB. Our study included a higher cutoff value (drop in FEV₁ of >15% as opposed to >10%) than the study published in this issue of the *Journal*. Our study found EIB to be uncommon (8%) in children seen because of dyspnea on exertion, whereas Burnett et al¹ reported an EIB prevalence of 43% in college athletes, most having no respiratory symptoms. This raises the question of the clinical relevance for a modest degree of EIB in the absence of dyspnea on exertion or other symptoms of asthma.

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REFERENCES

1. Burnett DM, Burns S, Merritt S, Wick J, Sharpe MR. Prevalence of exercise-induced bronchoconstriction measured by standardized testing in healthy college athletes. *Respir Care* 2016;61(5):571-576.
2. Randolph C. An update on exercise-induced bronchoconstriction with and without asthma. *Curr Allergy Asthma Rep* 2009;9(6):433-438.
3. Carlsen KH, Anderson SD, Bjermer L, Bonini S, Brusasco V, Canonica W, et al. Exercise-induced asthma, respiratory and allergic disorders in elite athletes: epidemiology, mechanisms and diagnosis: part I of the report from the Joint Task Force of the European Respiratory Society (ERS) and the European Academy of Allergy and Clinical Immunology (EAACI) in cooperation with GA2LEN. *Allergy* 2008;63(4):387-403.
4. Anthracopoulos MB, Fouzas S, Papadopoulos M, Antonogeorgos G, Papadimitriou A, Panagiotakos DB, et al. Physical activity and exercise-induced bronchoconstriction in Greek schoolchildren. *Pediatr Pulmonol* 2012;47(11):1080-1087.
5. Abu-Hasan M, Tannous B, Weinberger M. Exercise-induced dyspnea in children and adolescents: if not asthma then what? *Ann Allergy Asthma Immunol* 2005;94(3):366-371.

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