

The Diagnosis of "Current Asthma" for the Research Asthmatic

G Pesola, S Dogra, V Coelho-D'Costa

Citation

G Pesola, S Dogra, V Coelho-D'Costa. *The Diagnosis of "Current Asthma" for the Research Asthmatic*. The Internet Journal of Asthma, Allergy and Immunology. 2001 Volume 2 Number 2.

Abstract

The diagnosis of asthma is a constantly changing and depends on evolving knowledge. The classic diagnosis of asthma promulgated by the American Thoracic Society many years ago was: "a disease characterized by an increased responsiveness of the trachea and bronchi to various stimuli and manifested by a widespread narrowing of the airways that changes in severity either spontaneously or as a result of therapy." (1). With increased awareness of the inflammatory component of asthma and its interrelationship with airway hyperresponsiveness a more recent and broader definition of asthma is now embraced. This definition has the following three components: (1) airway obstruction that is usually (may not be totally reversible in some long-standing asthmatics) completely reversible either spontaneously or with treatment; (2) airway inflammation; (3) increased airway responsiveness to a variety of stimuli (2).

From the general practitioners perspective in the office setting, this definition is a bit much and not practical. They usually rely on a history of episodic wheezing, episodic cough, and recurrent shortness of breath that is relieved with bronchodilators. Chest radiography to rule out other causes of wheezing and referral for allergy testing may be done over time depending on many factors. A consulting specialist in asthma may obtain pulmonary function tests to follow lung function over time and determine if there is a bronchodilator response to therapy in a subset of cases. This clinical definition of asthma serves the community well and treats the "wheezers".

DISCUSSION

From the perspective of determining who has asthma for "research purposes" to test various treatment regimens, a more objective determination of asthma needs to be made. One of the alternatives suggested is to diagnose asthma as "current asthma" (3). This term means a subject with a history of asthma with wheezing within the last year and who also has been determined to have bronchial hyperresponsiveness (3). This eliminates many subjects with a history of asthma and wheezing without bronchial hyperresponsiveness (4), but allows a more objective determination of who has asthma for comparison purposes in the future. In addition, the predictive value of this definition in children followed longitudinally reveals subjects with

more severe asthma relative to a questionnaire diagnosis of asthma (5). This is the type of asthmatic who should be both followed and treated in the first place in contrast to the subject with a history of asthma who may or may not actually have the disease.

The emphasis on "current asthma" is also important from the perspective of asthmatic subjects who lose their bronchial hyperresponsiveness over time (6). Since asthma is a product of both genetic background and the environment, it is possible that the inflammation or other component that resulted in the initial hyperresponsiveness was alleviated with resolution of asthma as a diagnosis. Although this probably does not occur in most asthmatics, using this research diagnosis of asthma takes into account the possibility of a waxing and waning of the disease. This prevents enrollment of asthmatics who may not currently be asthmatic as well as those with the wrong diagnosis.

An addition to the "current asthma" diagnosis for the research asthmatic should be the asthmatic who cannot undergo a test of bronchial hyperresponsiveness due to a reduction in lung function. An alternative and safer test in this instance would be reversibility to a bronchodilator. A threshold might be the asthmatic with less than 60% predicted FEV1 prior to a methacholine challenge. An improvement in lung function after bronchodilator use of at

least 12% would suggest the active asthmatic with ongoing disease. This type of subject would be well defined for treatment purposes and would be hard to refute as a subject without asthma. In addition, this type of "current asthmatic" is the one who should be "currently" treated since they are demonstrating active disease through such tests.

A comment should be added regarding smoking. All that has been discussed is related to the nonsmoking asthmatic enrolled in research studies. In general and ideally, research studies looking only at asthma outcomes prefer to exclude smokers. This removes a potential confounding factor in the analysis. However, if smokers are included they are generally only included if they have a long history of asthma, have smoked less than 10-pack-years lifetime, and have not smoked in the last year. In addition, they should still need to meet the "current asthma" definition as noted above.

CONCLUSIONS

In conclusion, we suggest that for future "research studies" in asthmatics an unequivocal diagnosis of asthma encompass the "current asthmatic". This asthmatic has a history of wheezing in the last year and either (preferably) bronchial hyperresponsiveness on methacholine challenge or a positive

bronchodilator response to inhaled -agonist therapy. This diagnosis is objective in nature for comparative purposes, maximizes the chances that the asthma is currently active and not just a history, and should serve researchers well until more knowledge redefines what an asthmatic is.

References

1. Meneely GR, Renzetti AD, Steele JD, Wyatt JP, Harris HW. Chronic bronchitis, asthma, and pulmonary emphysema. A statement by the committee on diagnostic standards for nontuberculous respiratory disease. *Am Rev Respir Dis* 1962;85:762-768.
2. Guidelines for the Diagnosis and Management of Asthma. National Asthma Education Program Expert Panel Report, US Department of Health and Human Services, NIH publication 91-3042, 1991.
3. Toelle BG, Peat JK, Salome CM, Mellis CM, Woolcock AJ. Toward a definition of asthma for epidemiology. *Am Rev Respir Dis* 1992;146:633-637.
4. Jenkins MA, Clarke JR, Carlin JB, Robertson CF, Hopper JL, Dalton MF, Holst DP, Choi K, Giles GG. Validation of questionnaire and bronchial hyperresponsiveness against respiratory physician assessment in the diagnosis of asthma. *Int J Epidemiol* 1996;25:609-616.
5. Toelle BG, Peat JK, Berg RH, Dermand J, Woolcock AJ. Comparison of three definitions of asthma: a longitudinal perspective. *Journal Asthma* 1997;34:161-167.
6. Peat JK, Salome CM, Sedgwick CS, Kerrebijn J, Woolcock AJ. A prospective study of bronchial hyperresponsiveness and respiratory symptoms in a population of Australian school children. *Clin Exp Allergy* 1989;19:299-306.

Author Information

Gene R. Pesola, M.D., M.P.H.

Department. of Pulmonary/Critical Care Medicine, Harlem Hospital, Columbia University

Sanjay Dogra, M.D.

Department. of Pulmonary/Critical Care Medicine, Harlem Hospital, Columbia University

Vinette Coelho-D'Costa, M.D.

Department. of Pulmonary/Critical Care Medicine, Harlem Hospital, Columbia University