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Diagnosis of asthma in children: the contribution of a detailed history and test results

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Diagnosing asthma in children is most accurately done by using information on triggers and severity of wheeze and by F_{eNO} measurement, methacholine and exercise challenge tests. http://bit.ly/2kDWaRr

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ABSTRACT

Introduction: There are few data on the usefulness of different tests to diagnose asthma in children.

Aim: We assessed the contribution of a detailed history and a variety of diagnostic tests for diagnosing asthma in children.

Methods: We studied children aged 6–16 years referred consecutively for evaluation of suspected asthma to two pulmonary outpatient clinics. Symptoms were assessed by parental questionnaire. The clinical evaluation included skin-prick tests, measurement of exhaled nitric oxide fraction (F_{eNO}), spirometry, bronchodilator reversibility and bronchial provocation tests (BPT) by exercise, methacholine and mannitol. Asthma was diagnosed by the physicians at the end of the visit. We assessed diagnostic accuracy of symptoms and tests by calculating sensitivity, specificity, positive and negative predictive values and area under the curve (AUC).

Results: Of the 111 participants, 80 (72%) were diagnosed with asthma. The combined sensitivity and specificity was highest for reported frequent wheeze (more than three attacks per year) (sensitivity 0.44, specificity 0.90), awakening due to wheeze (0.41, 0.90) and wheeze triggered by pollen (0.46, 0.83) or by pets (0.29, 0.99). Of the diagnostic tests, the AUC was highest for F_{eNO} measurement (0.80) and BPT by methacholine (0.81) or exercise (0.74), and lowest for forced expiratory volume in 1 s (FEV_1) (0.62) and FEV_1/forced vital capacity ratio (0.66), assessed by spirometry.

Conclusion: This study suggests that specific questions about triggers and severity of wheeze, measurement of F_{eNO} and BPT by methacholine or exercise contribute more to the diagnosis of asthma in school-aged children than spirometry, bronchodilator reversibility and skin-prick tests.