Development of a tool to detect small airways dysfunction in asthma clinical practice

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Asthma patients with small airways dysfunction (SAD) could be identified reasonably well by asking about wheezing at rest and a few patient characteristics, but accuracy to predict SAD increases considerably when using lung function tests http://bit.ly/3TGEoHC

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Abstract

Background Small airways dysfunction (SAD) in asthma is difficult to measure and a gold standard is lacking. The aim of this study was to develop a simple tool including items of the Small Airways Dysfunction Tool (SADT) questionnaire, basic patient characteristics and respiratory tests available depending on the clinical setting to predict SAD in asthma.

Methods This study was based on the data of the multinational ATLANTIS (Assessment of Small Airways Involvement in Asthma) study including the earlier developed SADT questionnaire. Key SADT items together with clinical information were now used to build logistic regression models to predict SAD group (less likely or more likely to have SAD). Diagnostic ability of the models was expressed as area under the receiver operating characteristic curve (AUC) and positive likelihood ratio (LR+).

Results SADT item 8, "I sometimes wheeze when I am sitting or lying quietly", and the patient characteristics age, age at asthma diagnosis and body mass index could reasonably well detect SAD (AUC 0.74, LR+ 2.3). The diagnostic ability increased by adding spirometry (percentage predicted forced expiratory volume in 1 s: AUC 0.87, LR+ 5.0) and oscillometry (resistance difference between 5 and 20 Hz and reactance area: AUC 0.96, LR+ 12.8).

Conclusions If access to respiratory tests is limited (*e.g.* primary care in many countries), patients with SAD could reasonably well be identified by asking about wheezing at rest and a few patient characteristics. In (advanced) hospital settings patients with SAD could be identified with considerably higher accuracy using spirometry and oscillometry.