Excessive Variability in the Performance and Interpretation of the Metacholine Bronchial Challenge Test☆

Excesiva variabilidad en la realización e interpretación de la prueba de provocación bronquial con metacolina

To the Editor,

It is 3 years since the publication of the SEPAR guidelines on non-specific bronchial hyperresponsiveness in asthma,[1] which updated the available evidence and made practical recommendations, and we were interested in determining whether the methacholine bronchial challenge test was implemented and interpreted in a similar manner in Spanish hospitals. This test is of unquestionable value in the clinical evaluation of asthma (for establishing or ruling out diagnosis), as reflected in all current clinical practice guidelines.[2] An earlier study, performed in 1995, on non-specific bronchial challenge tests in several Spanish hospitals concluded that a more standardized methodology was required.[3] Twenty years on, we thought it would be interesting to determine if laboratories studying pulmonary function are currently conducting this test in a similar fashion.

To answer this question, we drew up a questionnaire consisting of 12 multiple-choice questions, and distributed it by electronic mail to the members of the asthma group of the SEPAR respiratory medicine society. We received responses from 26 Spanish hospitals: 50% of them perform less than 100 tests/year; 20% more than 300/year; and the remaining 30% perform between 100 and 300. In total, 85% of the tests are performed by a nurse and 15% by a doctor. Methacholine dilutions are prepared by the pharmacy department in 77% of cases, and only 23% of the laboratories perform the dilutions themselves. The inhalation method used in 39% of cases was tidal breathing (continuous nebulization), while most centers used a dosimetric technique (34%, 5-breath dosimeter method; 27%, simplified dosimeter method). Seventy percent of the respondents considered the test positive if FEV_1 fell by 20% from baseline after inhalation of the diluent, while 30% considered it positive after a fall of 10%. Only 23% reported that the initial dose of methacholine was selected on the basis of symptoms, medication, baseline FEV_1, and fall after diluent; most (77%) of the centers always used the same protocol. Criteria for the accumulated dose of methacholine that should be achieved before the test was considered negative varied. Seven laboratories reported that they administer a maximum dilution of 8 mg/ml, 10 reported 12.5 mg/ml, 6 reported 16 mg/ml, and 3 reported 32 mg/ml, although maximum concentration is not the same as accumulated dose. Disparities were also detected in the interpretation of the grade of normal bronchial response: PD20>1 mg was considered normal in 7 centers (26.9%), PD20>2 mg in 14 centers (53.8%) and PD20>3 mg in the remaining 5 (19%). Delta FVC was used in 1 center only. No significant differences were found among the variables analyzed and the number of methacholine tests performed annually in each hospital.

In our opinion, the data obtained from this sample of Spanish hospitals are sufficient to show that both the conduct of the methacholine test and the interpretation of the results vary widely among centers. Moreover, it is very likely that differences exist between non-specific bronchial challenge tests performed in allergology laboratories and in pulmonology laboratories. Obviously, variability such as that seen in our survey implies significant differences in the diagnosis of asthma: the same patient could be classified as asthmatic in one hospital and not in another. We must explore the reasons for the discrepancies, and this seems to be a good moment to foster in-depth reflection among the heads of our pulmonary function laboratories. This test is too important to fall victim to inertia in the methods applied by each center. We must all work together to design strategies for achieving closer adherence to the current recommendations and a greater degree of conformity in our procedures.

References

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