The basophil activation test has high reproducibility between laboratories and was well integrated in the clinical decision-making process in a specialised centre

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Abstract

Background: The basophil activation test (BAT) has high accuracy to diagnose peanut allergy (PA) and can reduce the need for oral food challenges (OFC); however, so far it has not been incorporated in clinical practice. **Methods:** We compared two BAT methodologies, their performance in two separate laboratories, their diagnostic utility and impact of BAT in clinical-decision-making in a specialised centre. **Results:** 102 children being assessed for PA were tested on BAT (72 allergic, 30 sensitised tolerant). There was little internal variation (CV<15%) and a very strong correlation (Rs>0.95) between BAT performed across laboratories. The 2 BAT methods were correlated but not interchangeable and 19% of cases had opposite results. The in-house BAT method (IH-BAT) was superior, as demonstrated by its better diagnostic performance (area under the ROC curve 0.929/0.957 versus 0.892/0.895 for CD63/CD203c), lower number of non-responders (4% versus 14%), lower background basophil activation (4% versus 9%) and less need for oral food challenges (29/12 versus 37/20 for OFC/positive OFC). BAT was feasible and well-accepted by clinicians: no patient with positive BAT was referred for OFC; only 37% of all tested patients needed an OFC and 14% of these (5% of total) reacted during OFC, which corresponded to 72/89% decrease in OFC/positive OFC, respectively, with the integration of BAT in the diagnostic work-up for peanut allergy. **Conclusions:** The BAT is a robust test that can reliably be transferred between laboratories; however, different BAT methods are not interchangeable. BAT was well integrated in the clinical decision-making process in a specialised centre.

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