Scottish Government Health Directorates Chief Scientist Office

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FOCUS ON RESEARCH

Investigating the accuracy and cost-effectiveness of novel component-resolved diagnostic test for food allergy: a systematic review

Researchers
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Aim
Food allergy has become more common during the last 10-15 years. Food allergy reactions range from mild symptoms to severe episodes which may, in some case, prove fatal. Accurate diagnosis of food allergy is crucial for effective treatment. Techniques currently used for diagnosis do not however always provide an accurate result, can be expensive and may risk the triggering of further reactions. A newer method – component resolved diagnosis (CRD) – may help to overcome some of these problems, but the evidence on this method has not been synthesised. We therefore sought to: 1) undertake a systematic review of published studies to determine the accuracy and cost-effectivness of CRD for diagnosing common food allergies; and 2) arrange discussions with patients, carers and healthcare professionals to consider the implications of our findings for the use of CRD to diagnose food allergy in NHSScotland.

Project outline/methodology
We first conducted a systematic review. This involved searching 11 databases for reports of studies that investigated the accuracy of CRD in diagnosing cow's milk, wheat, hen's egg, peanut, soy, tree nuts, fish and shelfish allergy. We extracted all relevant data from each study report and then combined and interpreted the findings. We assessed the scientific quality of the included studies using an internationally accepted tool. Included studies were diverse; we therefore analysed the data by describing and explaining the results in a narrative synthesis. We then disucssed the findings with patients with allergies, carers, allergy doctors and allergy scientists from across Scotland, in order to consider the implications of our findings for food allergy diagnosis in NHSScotland.

Key results
We identified 11 relevant studies. These studies investigated CRD for cow's milk, hen's egg, hazelnut, peanut and shrimp allergy. No studies meeting our inclusion criteria investigated CRD for diagnosing wheat, soy, or fish allergies. Overall, this body of research found that whilst CRD could assist with diagnosing food allergy, there was no clear or consistent advantage that routine use of CRD offered over-and-above existing approaches. None of the studies investigated cost-effectiveness.

The discussions revealed that patients with food allergies, their carers and healthcare professionals did not feel that CRD should routinely be used across NHSScotland. They did however consider that in CRD may have a role in specialist hands in some specific contexts – for example, persisting diagnostic uncertainty despite conventional testing.

Conclusions
While there may be a few specialist uses for CRD to diagnose food allergy, there is insufficient evidence to promote widespread use of this technology in routine care settings.

What does this study add to the field?
This is the first comprehensive synthesis of the evidence on the role of CRD in diagnosing food allergies. We identified important research gaps that need to be addressed before CRD can be considered as part of routine care in NHSScotland.

Implications for practice or policy
Conventional allergy testing approaches should remain the investigations of choice for diagnosing food allergy. CRD should only be considered for use by allergy specialists in specific contexts – for example, where diagnostic uncertainty persists despite conventional allergy testing.

Where to next?
We published our protocol, have a paper in press in a leading allergy journal and plan to share findings with professionals throughout Scotland through the Scottish Allergy and Respiratory Academy meetings. We have identified a number of research gaps that we plan to fill through follow-on research.

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