Scottish Government Health Directorates Chief Scientist Office

CHIEF SCIENTIST OFFICE

FOCUS ON RESEARCH

DEVELOPING AND TESTING A SCREENING TOOL TO ACCURATELY PREDICT PEOPLE WITHOUT ALLERGY

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Aim
To develop and test a screening tool that can accurately discriminate between atopic (those with a a positive skin test to common airborne allergens) and non-atopic individuals in patients with suspected allergy.

Project Outline/Methodology
Asthma, hay fever, skin rashes and reactions to foods are common reasons for people in Scotland to consult their doctor, and many people suspect that these symptoms are caused by allergy. If this is the case, then people can spend time and money trying to find out the specific allergic trigger, or avoiding possible triggers; however, this is often unnecessary as all of these symptoms can also be caused by non-allergic mechanisms. The development of a set of questions that could identify whether someone has an allergy or not may be an extremely valuable tool for health care professionals. Consequently, we developed and tested a set of questions (a screening tool) to see if they can correctly identify those people who are unlikely to have allergy and who do not require further tests. The screening tool included five questions which have been used previously in a cohort study plus six questions generated from a consultation exercise with allergy specialist. Adults answered the 11 questions in the screening tool and were then skin prick tested for a range of aeroallergens (grass, house dust mite, cat and dog) and the results compared.

Key Results
One hundred and forty three participants answered the screening questions and were skin prick tested. The positive predictive value (the chance of having the condition among those that test positive) of individual questions ranged from 48-72%, however this was increased to 88% when combinations of questions were explored.

Conclusions
We have successfully tested the eleven questions in our screening tool and identified the best combination of questions to give an acceptable positive predictive value, which may be indicative of non-atopy in people with suspected allergy, however these questions should be tested in a larger independent population. The questions were:

- Do you have or have you ever had hayfever?
- Do your allergy symptoms vary when you go from place to place (e.g. on holiday)?
- Do any of your parents or siblings (brothers or sisters) have or have ever had hayfever?
- Is there a specific trigger that always sets off your allergy symptoms?

What does this study add to the field?
The purpose of this study was to identify simple questions which accurately predict the absence of atopy, which could then developed into a screening tool to be used by health care professionals and the general public to exclude allergy. This has the benefit of preventing unnecessary avoidance of allergens and could also be useful in excluding an allergic basis for adverse reactions to food. Previous work has focussed on predicting the presence of atopy to enable optimum diagnosis and treatment strategies.

Implications for Practice or Policy
The screening tool has the potential to improve practice, reduce the need for consultations in primary and secondary care and the need for costly, time consuming allergy diagnostic tests.

Where to next?
The questions in this screening tool need further validation in a larger independent population. This would increase the numbers in the combination analysis and ideally increase the positive predictive value to >95%. The screening tool could then be confidently used by health care professionals or patients to accurately predict atopic status.

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