Screening for 'changed gene' could prevent asthma attacks and improve treatment

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Screening children with asthma for a specific genetic change could help prevent asthma attacks and lead to more effective treatments, according to scientists at the University of Aberdeen.

The study of 4000 children with asthma revealed that those with the gene change were 50% more likely to suffer an attack than those without the gene change, when treated with a steroid inhaler and another treatment called LABA.

Asthma treatment in children is usually straight forward and involves a steroid inhaler.

But 10% of children with asthma still experience the symptoms despite the inhaler and move on to trying one of three alternative treatment options which may help.

At present, determining which of these three methods is most effective for an individual is a matter of trial and error.

Led by Dr Steve Turner, researchers from the University of Aberdeen have pooled results from five studies around the world to examine the theory that the identification of a particular gene could help to determine the most appropriate treatment.

The results have been published today (January 11) in The *Journal of Allergy and Clinical Immunology*.

The study focussed on a treatment called a long acting beta agonist (LABA) - a medication which causes the muscles lining the breathing tubes to relax and widen the airway.

Approximately 60% of people have a change in the gene which makes the LABA work less well.

The researchers found that children with this very common genetic change were 50% more likely to have an asthma attack if treated with just a steroid inhaler and LABA. Children with the genetic change who were treated with other asthma medicines did not experience increased asthma attacks.

The study concluded that the presence of this genetic change made the LABA treatment less effective.

Dr Turner said: "The question is, 'how do we match the right children to the right treatment?' Our study shows that those with the gene change are more likely to suffer an attack because they are being treated with LABA, which is ineffective for them.

"So the implication of this finding is that routine testing for this very common gene may let physicians know which asthma treatment works best in children with asthma and spare them an unsuccessful 'trial by treatment'.

"These findings now need to be properly tested in a clinical trial."

Dr Turner and colleagues pooled results from five studies in Scotland, England, the Netherlands and the USA. Only children with asthma took part in these studies. The information gathered included their treatment, whether they had had a recent asthma attack and also samples were collected for gene analysis.

More information: Steve Turner et al. Childhood asthma exacerbations and the Arg16 β2-receptor polymorphism: A meta-analysis stratified by treatment, *Journal of Allergy and Clinical Immunology* (2016). DOI: 10.1016/j.jaci.2015.10.045

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