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NEWS

Genetic test can help reduce school absences owing to asthma

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Genetic testing of children with asthma can identify the most effective treatment and thereby reduce asthma exacerbations, a new study shows.[1]

The trial found that one add-on treatment for asthma, salmeterol, was less effective than another, montelukast, in 62 Scottish children with the homozygous arginine-16 mutation. Children taking montelukast had fewer school absences resulting from asthma, had milder exacerbations, and used less of the salbutamol "reliever" inhaler over the following year.

Salmeterol and montelukast are both used in patients with symptoms that are not controlled with regular inhaled steroids. At a press conference in London Somnath Mukhopadhyay, one of the investigators, explained, "Salmeterol works better than montelukast, but it is not effective in a significant number of children."

He added that these children could be identified by testing for the mutation in a saliva sample and that the test could be as cheap as routine urine microscopy.

The homozygous arginine-16 mutation is present in about 15% of children and occurs in the β_2 adrenoceptor gene. This receptor is the binding site for salmeterol, which helps to dilate bronchioles and so reduce the symptoms of asthma. Mukhopadhyay hypothesises that the arginine-16 mutation causes the receptor to bind with less affinity to salmeterol, preventing the drug from working.

Experts were cautiously optimistic about the findings. Ian Sayers, a molecular geneticist at the University of Nottingham, noted in a linked editorial that "although these results are encouraging, it is important to note that the relevance of arginine-16 genotyping remains unclear with conflicting data observed in large prospective studies."[2]

Donald Singer, professor of pharmacology at the University of Warwick, said, "This study is important in providing evidence that simple genetic testing can be used to personalise selection of medicine in clinical practice. However, this is a small study and needs to be confirmed in larger, well controlled clinical trials."

Malayka Rahman, research communications officer at the charity Asthma UK, agreed that it was too soon to advocate clinical genetic testing for the mutation. "In the meantime, current asthma treatments are very effective, so we would advise parents of children with asthma to keep an eye on their child's inhaler use and symptoms and if they do have any concerns to discuss these with their GP or asthma nurse," she advised.

Mukhopadhyay and his team plan to carry out larger trials to assess the effect of different β_2 adrenoceptor gene mutations on the response to different inhalers.

1 Lipworth BJ, Basu K, Donald HP, Tavendale R, Macgregor DF, Ogston SA, et al. Tailored second line therapy in asthmatic children with the arginine-16 genotype. *Clin Sci* , 8 Jan 2013. doi:10.1042/CS20120528.

2 Sayers I. A tailored approach to asthma management: Arg16 holds the key? *Clin Sci* , 3 Dec 2012. doi:10.1042/CS20120640.

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