Steroids to treat asthma: How safe are they?

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Children experiencing an asthma attack who are treated with a short burst of oral steroids may have a transient depression of immune response according to a new study led by Université de Montréal. These findings, published in this month's issue of *Pediatric Allergy, Immunology and Pulmonology*, have implications for asthmatic children who have flare-ups and who may be exposed to new contagious diseases.

"There is no question that the administration of corticosteroids reduces the risk and duration of hospital admission in children with acute asthma remain the most effective treatment for moderate and severe asthma exacerbations," says first author Francine M. Ducharme, a Université de Montréal professor and paediatrician and researcher at the Sainte-Justine University Hospital Research Center. "However, the safety profile of these medications continues to raise concerns among parents and physicians. New concerns over their possible impact on the immune system stem from rare reports linking or severe chickenpox infections linked with corticosteroid administration."

Reduced immune response to new triggers

Ducharme and colleagues evaluated the immune response of children aged 3 to 17 years, who had arrived at the emergency department (ED) with an asthma attack. All subjects were given immune triggers (known as antigens) and the immune response between those who received corticosteroids versus those who did not were compared.

"Several corticosteroid-treated children had a significantly lower

immune response, as measured by the amount of antibody produced, than non-treated kids," says Ducharme.

Reduced immunity only transient

Children enrolled in the study were revaccinated with the antigen five weeks following their initial ED visit. Comparable immune responses were measured in children exposed to oral corticosteroids and not exposed to corticosteroids.

"These findings indicate there is a transient, not sustained, immune suppression in some children exposed to a new antigen at the same time as a corticosteroid administration," says Ducharme.

"In summary, our finding suggest a transient immune suppression occurs in some children who are concomitantly exposed to a new antigen and corticosteroids during an asthma attack, with a recovery within six weeks."

"Given the high frequency of use of these drugs over the past 20 years, the very rare occurrence of severe infectious disease is reassuring and would suggest that the window of risk is very small and only applies to exposure to a new antigen. However, before prescribing oral corticosteroids, it would appear prudent to systematically enquire about recent exposure to chickenpox in children who did not have chickenpox or the vaccine," adds Ducharme. Moreover, all children with asthma who have not had chickenpox should be vaccinated for this condition.

About asthma

The diagnosis of asthma, which is a chronic inflammatory disease of the lungs, has been significantly on the rise over the last few decades. In

2009, asthma caused approximately 250,000 deaths globally. However, with proper treatment, including the administration of inhaled bronchodilators and corticosteroids, all children with asthma can lead a normal life.

Corticosteroids are anti-inflammatory drugs and are used in asthma to reduce swelling. Strong scientific evidence shows that the use of these medications in patients with moderate to severe acute asthma significantly reduces the rate of hospitalizations and, if admitted, the length of stay in hospital. Consequently, these drugs are and should remain the cornerstone of the treatment of an acute asthma exacerbation.

More information: "A short burst of oral corticosteroid for children with acute asthma – Is there an impact on immunity?", was authored by Francine Ducharme from the Université de Montréal and the Sainte-Justine University Hospital Research Center, Hans Ochs, from the University of Washington, and Xun Zhang and Bruce Mazer, of the Montreal Children's Hospital.

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