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Can Routine Asthma Treatment Result in Serious Adrenal Suppression?

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Most clinicians are well aware of the complications of glucocorticoid (GC) therapy, including adrenal suppression. We know that inhaled GC therapy for asthma can cause growth suppression in children through this mechanism.

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According to this study from our friends up north, the answer is yes.

Source: Goldbloom EB, Mokashi A, Cummings EA, et al. Symptomatic adrenal suppression among children in Canada. **Arch Dis Child. 2017;102(4):338-345**; doi:10.1136/archdischild-2016-311223. See AAP Grand **Rounds commentary by Dr. Patricia Fechner** (subscription required).

Most clinicians are well aware of the complications of glucocorticoid (GC) therapy, including adrenal suppression. We know that inhaled GC therapy for asthma can cause growth suppression in children through this mechanism. However, I was somewhat surprised at the relatively large number of children with serious adrenal suppression, i.e. adrenal crisis, uncovered in this Canadian investigation.

The **Canadian Paediatric Surveillance Program** (CPSP) is a program I wish we had in the US. It's a joint effort of the **Canadian Paediatric Society** and the **Public Health Agency of Canada**. For this study, the CPSP carried out active surveillance for adrenal suppression (AS) in children receiving any type of GC therapy over a 2-year period, via a monthly questionnaire. Over 2500 pediatricians and subspecialists participated, though not all participated every month; still, the participation rate was 80%, which is pretty good. A total of 115 cases of symptomatic AS were reported, but after verification by study personnel using pretty strict criteria, the number was down to 46 confirmed cases. Of course, the most common indication for GC therapy was asthma, but other entities like bronchopulmonary dysplasia, eosinophilic esophagitis, and malignancy also were represented in the symptomatic AS population. The investigators estimated the number of cases translated to a rate of 0.35/100,000 children, which is clearly an underestimate given the strict criteria used and the fact that primary care providers (general practitioners) were not part of the surveillance group.

Of those 46 cases, 6 had adrenal crisis, a very serious complication; three of those children had received only inhaled or intranasal GC, with no systemic GC at all in the past.

Let this be a good reminder for us all that GC therapy can cause serious adrenal suppression even when not administered parenterally or orally. All primary care providers should monitor their children receiving any kind of GC therapy for alterations in growth as well as for the more serious clinical manifestations of AS. The latter may present relatively insidiously, with vague complaints such as fatigue, nausea, and myalgia.

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