Oral steroid-sparing effect of high-dose inhaled corticosteroids in asthma

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ABSTRACT

Background: The proportion of the efficacy of high-dose inhaled corticosteroids (ICS) in oral corticosteroid-dependent asthma that is due to systemic effects is uncertain. This study aimed to estimate the ICS dose–response relationship for oral corticosteroid-sparing effects in oral corticosteroid-dependent asthma, and to determine the proportion of oral corticosteroid-sparing effects due to their systemic effects, based on the comparative dose–response relationship of ICS *versus* oral corticosteroids on adrenal suppression.

Methods: Systematic review and meta-analysis of randomised controlled trials reporting oral corticosteroid-sparing effects of high-dose ICS in oral corticosteroid-dependent asthma. In addition, reports of oral corticosteroid to ICS dose-equivalence in terms of adrenal suppression were retrieved. The primary outcome was the proportion of the oral corticosteroid-sparing effect of ICS that could be attributed to systemic absorption, per 1000 µg increase of ICS, expressed as a ratio. This ratio estimates the oral corticosteroid sparing effect of ICS due to systemic effects.

Results: 11 studies including 1283 participants reporting oral corticosteroid-sparing effects of ICS were identified. The prednisone dose decrease per 1000 µg increase in ICS varied from 2.1 mg to 4.9 mg, depending on the type of ICS. The ratio of the prednisone-sparing effect due to the systemic effects per 1000 µg of fluticasone propionate was 1.02 (95% CI 0.68–2.08) and for budesonide was 0.93 (95% CI 0.63–1.89).

Conclusion: In patients with oral corticosteroid-dependent asthma, the limited available evidence suggests that the majority of the oral corticosteroid-sparing effect of high-dose ICS is likely to be due to systemic effects.