Increased systemic absorption of inhaled corticosteroids in asthmatics with better lung function


This study compared the pharmacokinetic profiles of four different inhaled corticosteroids in 30 subjects with asthma who had an FEV1 ranging 36–138% predicted. Each subject inhaled doses of beclometasone, budesonide, fluticasone and mometasone in random order. Plasma concentrations of the drugs were monitored for 8 h. The primary endpoint was the relationship between the area under the plasma concentration–time curve (AUC) and percentage predicted FEV1 (FEV1%).

Budesonide had the shortest terminal half-life (2.6 h) and fluticasone the longest (5.7 h). The study showed significant relationships between FEV1 percentage and AUC: the higher the FEV1 percentage of the patient the higher the AUC for all four drugs. Correlation coefficients (r) for these relationships were beclometasone 0.37 (p = 0.05), budesonide 0.33 (p = 0.08), fluticasone 0.25 (p = 0.20) and mometasone 0.52 (p = 0.004). The absorption of the drugs were 1.3, 1.3, 1.4 and 2.2 times higher, respectively, at 100% predicted compared to 50% predicted FEV1. Similar correlations were seen when AUC was compared with the percentage predicted peak expiratory flow. The relationships between FEV1% and AUC were stronger when adjusted for age but weaker when adjusted for gender.

This study highlights the importance of reviewing doses of inhaled corticosteroids in those with improved lung function in order to prevent undesirable systemic effects.

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