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Title: Ethnic variation in response to intramuscular triamcinolone in children with severe therapy resistant asthma

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Body: Introduction: Ethnicity may influence response to treatment of asthmatic patients, but this is controversial Objectives: To determine if ethnicity influences the response to intramuscular steroid (eliminating adherence as an issue). Methods: Children with severe therapy resistant asthma were admitted for assessment of steroid response. Asthma Control Test (ACT), exhaled nitric oxide (FE_{NO}), spirometry and sputum eosinophils were measured before and 4 weeks after intramuscular triamcinolone. Definitions of responsiveness: symptom response, ACT ↑ to ≥20 or by ≥5; inflammatory response, if paired induced sputum samples available, sputum eosinophil count ↓ to ≤2.5%, or if unavailable, FE_{NO} ↓ to <24 parts per billion (ppb); lung function response, FEV₁ ↑ to ≥-1.96 Z-score or by ≥15%. Non-responder, improvement in 0 domain; partial response, ≥1 domains; complete response, all 3 domains. Results: 79 subjects were identified (Caucasian = 54, Black = 16, Asian = 5, Mixed Caucasian/Black = 4). There were no ethnic differences in the proportion of non-responders, partial responders and complete. After triamcinolone, there was a significant drop in mean FE_{NO} in Caucasians (49.6 to 26.3 ppb, p < 0.0001) but not in black (55.5 to 54.1 ppb, p = 0.87). More Black than Caucasian were FE_{NO} non-responders (86.7 vs. 45.3%, p<0.05) and had exacerbations despite triamcinolone (61 vs. 17%, p<0.05). There was no ethnic difference in ACT, FEV₁ and sputum eosinophil responders. Conclusions: Black asthmatic children were less likely to have a FE_{NO} response and had more exacerbations when compared to Caucasians. Further research is needed to understand the mechanisms of these differences.