The role of FeNO in cough management: a randomised controlled trial

Background: Fractional exhaled nitric oxide (FeNO) is useful in predicting treatment response in asthma, but it is unknown whether it is a useful baseline measure in patients with cough symptoms and previously undiagnosed asthma.

Aims and objectives: To estimate the interaction between baseline FeNO and treatment effect, in terms of cough symptoms, in patients with non-specific respiratory symptoms.

Methods: This was a multi-centre, randomised controlled trial, where patients in UK and Singapore were randomised to receive either extrafine inhaled corticosteroids (ICS, 200 µg beclomethasone bid) or placebo for a 4-week period. NIOX VERO (Circassia) was used to measure baseline FeNO. The primary endpoint was change in Asthma Control Questionnaire score. This work presents the results for a secondary endpoint: change in Visual Analogue Scale (VAS) Cough.

Results: The predominant baseline symptom of the study sample (n=257) was cough, present in 85% of patients. We found that higher FeNO was associated with a greater treatment effect. For every 10 ppb increase in baseline FeNO, the change in VAS Cough was 3.115 (95% confidence interval [CI], 0.579-5.651) greater in the extrafine ICS arm versus placebo. In a univariable prediction model of the extrafine ICS arm, patients with baseline FeNO >50 ppb were over twice as likely to improve in VAS Cough by ≥20 as patients with FeNO ≤50 ppb (unadjusted odds ratio, 2.37 [95% CI, 1.01-5.55]).

Conclusions: FeNO measurement is a simple, near patient, quantitative and non-invasive diagnostic tool for patients with cough symptoms: treatment with ICS may be successful in patients found to have high FeNO. Further research is needed to establish cut-points for recommendation.

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