Effect of fractional exhaled nitric oxide (F ENO)-based asthma management during pregnancy versus usual care on infant development, temperament, sensory function and autism signs

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Abstract

Background Asthma during pregnancy is associated with a range of adverse perinatal outcomes. It is also linked to increased rates of neurodevelopmental conditions in the offspring. We aimed to assess whether fractional exhaled nitric oxide (F ENO)-based asthma management during pregnancy improves child developmental and behavioural outcomes compared to usual care.

Methods The Breathing for Life Trial was a randomised controlled trial that compared F ENO-based asthma management during pregnancy to usual care. Participants were invited to the developmental follow-up, the Breathing for Life Trial – Infant Development study, which followed up infants at 6 weeks, 6 months, and 12 months. The primary outcomes were measured in infants at 12-months using the Bayley-III: Cognitive, Language, and Motor composite scores. Secondary outcomes included Bayley-III social-emotional and adaptive behaviour scores, autism likelihood, and sensory and temperament outcomes. The exposure of interest was the randomised intervention group.

Results 220 infants and their 217 participating mothers were recruited to the follow-up; 107 mothers were in the intervention group and 113 were in the control group. There was no evidence of an intervention effect for the primary outcomes: Bayley-III cognitive (Mean=108.9 control, 108.5 intervention, p=0.93), language (Mean=95.9 control, 95.6 intervention, p=0.87) and motor composite scores (Mean=97.2 control, 97.9 intervention, p=0.25). Mean scores for secondary outcomes were also similar among infants born to control and F ENO group mothers, with few results reaching p<0.05.

Conclusion In this sample, F ENO-guided asthma treatment during pregnancy did not improve infant developmental outcomes in the first year of life.