



Fractional exhaled nitric oxide: where there is smoke, there is fire

Ourania S. Kotsiou, Konstantinos I. Gourgoulialis & Zoe Daniil

To cite this article: Ourania S. Kotsiou, Konstantinos I. Gourgoulialis & Zoe Daniil (2020): Fractional exhaled nitric oxide: where there is smoke, there is fire, Journal of Asthma, DOI: [10.1080/02770903.2020.1713146](https://doi.org/10.1080/02770903.2020.1713146)

To link to this article: <https://doi.org/10.1080/02770903.2020.1713146>



Accepted author version posted online: 10 Jan 2020.
Published online: 12 Jan 2020.



Submit your article to this journal [↗](#)



Article views: 12



View related articles [↗](#)



View Crossmark data [↗](#)



LETTER

Fractional exhaled nitric oxide: where there is smoke, there is fire

Ourania S. Kotsiou, MD, PhD, Konstantinos I. Gourgoulisanis, MD, and Zoe Daniil, MD

Asthma External Unit, Faculty of Medicine, Department of Respiratory Medicine, University of Thessaly, BIOPOLIS, Larissa, Greece

Dear Editor,

We read with great interest the well-presented article entitled “Diagnostic value of FeNO and MMEF for predicting cough variant asthma in chronic cough patients with or without allergic” by Chen et al. (1), supporting that fractional exhaled nitric oxide (FeNO) in combination with maximum mid-expiratory flow (MMEF) could predict cough variant asthma (CVA) from chronic cough in patients with or without allergic rhinitis.

FeNO correlates with airway hyperresponsiveness and acts as a marker of airway inflammation (1,2). Furthermore, it has been proposed as a risk factor involved in airway remodeling of asthma, thus being a useful tool for detecting individuals with a coming decrease in pulmonary function and lung function changes (3–5). We have recently reported that FeNO might be a marker of chlorine exposure in young asthmatic swimmers as elevated FeNO levels before and after swimming were recorded in swimmers with asthma not observed in a different exercise field (2). Hence, FeNO reveals the presence of an irritating factor at the swimming pool, such as chlorine, that might be responsible for increased airway inflammation in young swimmers with asthma (2). Accordingly, Chen et al. supported that FeNO might be an effective indicator for distinguishing between CVA and non-CVA (1).

Similarly, in preschool children, FeNO may be helpful in objectively discriminating between different wheezing phenotypes and probably in predicting asthma later in life (6). Moreover, algorithms that include FeNO measurements can help in asthma phenotyping (7), monitoring response to anti-inflammatory, or long-term control medications, including dose titration, weaning, and treatment adherence (8,9). What is more, we recently highlighted a significant role of FeNO measured at a flow rate of 50 ml/s as a useful preoperative predictive marker regarding pulmonary complications in smoking patients with COPD who are undergoing abdominal surgery (4).

In other words, FeNO testing constitutes a noninvasive, inexpensive, and easy-to-perform assay that unmasks

latent airway inflammation and underlying asthma; while it can predict an exacerbation of a chronic respiratory disease such as asthma or COPD. FeNO could be used as an early footprint of personalized medicine as evidence supports that there is no smoke without fire. Where there are elevated levels of FeNO, there is type 2 eosinophilic airway inflammation; thus, FeNO has proved to be a useful indicator of previously hidden airway disease.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References

1. Chen LC, Zeng GS, Wu LL, Zi M, Fang ZK, Fan HZ, Yu HP. Diagnostic value of FeNO and MMEF for predicting cough variant asthma in chronic cough patients with or without allergic rhinitis. *J Asthma*. 2019;56:1–8.
2. Kotsiou OS, Peletidou S, Vavougiou G, Karetsi E, Stavrou V, Zakynthinos G, Gourgoulisanis KI, Daniil Z. Exhaled nitric oxide as a marker of chlorine exposure in young asthmatic swimmers. *Ann Allergy Asthma Immunol*. 2019;123(3):249–55. doi:10.1016/j.anai.2019.06.008.
3. Kotsiou OS, Gourgoulisanis KI. Fractional exhaled nitric oxide: signaling lung function changes in obstructive lung diseases. *Ann Allergy Asthma Immunol*. 2018;120(3):340. doi:10.1016/j.anai.2017.12.001.
4. Logotheti H, Pourzitaki C, Tsaousi G, Aidoni Z, Vekrakou A, Ekaterini A, Gourgoulisanis K. The role of exhaled nitric oxide in patients with chronic obstructive pulmonary disease undergoing laparotomy surgery: the noxious study. *Nitric Oxide*. 2016;61:62–8. doi:10.1016/j.niox.2016.10.005.
5. Haccuria A, Michils A, Michiels S, Van Muylen A. Exhaled nitric oxide: a biomarker integrating both lung function and airway inflammation changes. *J Allergy Clin Immunol*. 2014;134(3):554–9. doi:10.1016/j.jaci.2013.12.1070.
6. Pijnenburg MW. The role of FeNO in predicting asthma. *Front Pediatr*. 2019;7:41. doi:10.3389/fped.2019.00041.
7. Ricciardolo FL, Sorbello V, Ciprandi G. FeNO as biomarker for asthma phenotyping and management. *Allergy Asthma Proc*. 2015;36(1):e1–8. doi:10.2500/aap.2015.36.3805.

8. Sato S, Saito J, Fukuhara A, Uematsu M, Suzuki Y, Togawa R, Sato Y, Nikaido T, Wang X, Tanino Y, et al. The clinical role of fractional exhaled nitric oxide in asthma control. *Ann Allergy Asthma Immunol.* 2017;119(6):541–7. doi:[10.1016/j.anai.2017.09.059](https://doi.org/10.1016/j.anai.2017.09.059).
9. Wang Z, Pianosi P, Keogh K, Zaiem F, Alsawas M, Alahdab F, Almasri J, Mohammed K, Larrea-Mantilla L, Farah W, et al. The clinical utility of fractional exhaled nitric oxide (FeNO) in asthma management. Rockville (MD): Agency for Healthcare Research and Quality; 2017.