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Comment on: Predictive and Diagnostic Value of Nasal Nitric Oxide in Eosinophilic Chronic Rhinosinusitis with Nasal Polyps

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Dear Editor,

I was interested to read the article authored by Lv et al. [1] published in *Int Arch Allergy Immunol*. The authors aimed to compare the use of clinical parameters with nasal nitric oxide (nNO) to prediagnose patients with eosinophilic chronic rhinosinusitis with nasal polyps (eCRSwNP) from Central China. They enrolled 70 patients with CRSwNP undergoing endoscopic sinus surgery and 30 healthy subjects. nNO measurements were performed in all of these subjects. They reported that in patients with eCRSwNP, nNO levels were significantly higher than those in patients with non-eCRSwNP ($p < 0.0001$). Receiver operating characteristic (ROC) curves and logistic regression analysis were used to assess the predictive potential of the clinical parameters. To diagnose eCRSwNP, the highest area under the curve (0.803) was determined for nNO. At a cutoff of >329 parts per billion, the sensitivity was 83.30% and the specificity was 71.70%.

Although the article provides insight into the decision that measurement of nNO is useful for the early diagnosis of eCRSwNP, its conclusion is limited in 3 ways. First, it is good to know that knowledge of the reported estimates does not give total information about the importance of nNO in clinical practice. For clinical purposes, diagnostic added value is much more important than the reported estimates [2, 3]. Diagnostic knowledge is not provided by answering the question,"How accurate is this test?" (test accuracy research). Diagnostic knowledge is the information needed to answer the question, "What is the probability of the presence or absence of a specific disease given these test results?" (diagnostic accuracy research). Therefore, the diagnostic added value of nNO (differences in ROC curves for 2 diagnostic models with and without nNO) is greatly important in clinical practice. Second, without assessing reliability, we cannot judge about diagnostic value. The diagnostic value is estimated by 2 parameters: calibration (reliability) and discrimination (accuracy) [3–8]. Third, ROC has nothing to do with the predictive value of nNO. The first consideration is that group-based approaches cannot be applied for an individual-based purpose. Therefore, applying logistic regression analysis and reporting association, even statistically significant, do not guarantee accurate prediction [3, 9, 10]. The second consideration is that for prediction of

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an outcome (prediagnose) in clinical practice such as eCRSwNP, we need data from 2 different cohorts or at least from 1 cohort divided into 2 to first to develop a prediction model and then validate it. Misleading results are generally the main outcome of research that fails to validate its prediction models. I thus argue that there are some methodological limitations and approaches to overcome them for assessing the predictive and diagnostic value of nNO; otherwise, misinterpretation cannot be avoided.

Conflict of Interest Statement

S. Sabour declares that he has no conflict of interest.

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Author Contributions

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