Reviewer’s report

Title: Expiratory flow rate, breath hold and anatomic dead space influence electronic nose ability to detect lung cancer

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Reviewer: Konstantinos Kostikas

Reviewer’s report:

The study by Bikov and colleagues has evaluated the effects of expiratory flow rate, breath holding and anatomic dead space on the ability of an electronic nose (e-nose) to detect lung cancer. The authors present significant effects of these interventions in the breathprints of healthy individuals but not in patients with lung cancer in their relatively small population; these effects changed significantly the discrimination ability of the e-nose. Their results are interesting and provide some insight in the standardization of this procedure in the diagnosis of lung cancer and the authors provide a detailed and comprehensive discussion on the possible causes for these differences.

My specific comments are the following:

The choice of control subjects is quite surprising. All of them were never smokers, whereas patients with lung cancer were all current or ex-smokers as expected. This is of important clinical relevance and definitely needs to be discussed by the authors.

The very small population of lung cancer (n=17) is another important limitation. The fact that 10 of them were already receiving chemotherapy may well influence the results. I would expect treatment-naïve lung cancer patients.

The authors have found significant differences in principal components analysis according to their maneuvers only in the control subjects and not in the lung cancer patients. This needs to be discussed.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests