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EDITORIAL

Exhaled breath condensate in asthma: Are we stupid if we do not keep it simple?

The research on exhaled breath condensate (EBC) is not new in asthmatic children. In fact, there has been considerable interest for at least a decade and, though initially promising, it is does not seem to have covered all expectations. It happens quite frequently that – in a disease such as asthma in which so much is still to be discovered – one tries to stick to a simple and definite test value to diagnose and follow up a disease. Humans prefer simple things and try to pack complex information into simpler arguments in order to make decisions which are both quick and correct. This applies especially to doctors who have to make quick decisions with sometimes complex and contradictory information. Maybe we are looking to a complex disease, such as asthma, from a too simplistic point of view which might be useful for infectious diseases but does not seem to apply for non-communicable diseases, with much more complex causes.

The paper by Vuljanko et al.[1] in the present issue of A&I reflects this complex situation in their analysis of EBC from a group of asthmatic children when they are compared with healthy peers: no single biomarker of those measured by the authors (pH, carbon dioxide tension, oxygen tension, magnesium, calcium, iron and urates) was significantly different between asthmatics and no-asthmatic children. However, a discriminant analysis including all biomarkers detected significant differences between both groups and a composite of them was able to diagnose asthma with reasonable sensitivity (81.4%) and specificity (43.7%) which yields summarising Youden's index[2] of 25%. Although fair, this is still far from a good diagnostic tool. In fact, better Younden's indexes are achieved by questionnaires on symptoms which are definitely cheaper and much quicker. For instance, the validation study on the 15-item Brief Respiratory Questionnaire (BRQ) on asthma symptoms had a Youden's index of 90% against clinical diagnosis of asthma by a doctor.[3] This questionnaire was designed for teachers of preschool grades.

An important aspect of the aforementioned paper is that there was no significant difference in lung function parameters between asthmatics and non-asthmatics, neither when obtained by spirometry nor by impulse oscillometry. This may indicate that the degree of inflammation and bronchial obstruction in asthmatics was minimal at the time of the collection of breath condensate. As expected, exhaled nitric oxide (NO) was significantly higher in asthmatics (with or without gastro-oesophageal reflux) than in non-asthmatics, although most children had normal values (no proportion of normal values in asthmatics is shown in the paper), which may implicate a higher mean in asthmatics driven by just several cases. Then, it is not so surprising that the values of the different biomarkers in EBC were not significant between groups.

From my point of view, the importance of the paper by Vuljanko et al.[1] is not related to the validity of EBC to diagnose asthma but to the fact that we should look for not just a marker, but for a combination of markers. Those markers might not be exactly the ones included in the paper published by A&I in the present issue; however, the approach might be probably a similar one. Until the single and infallible biomarker is not described we might better look at a complex composite of biomarkers which probably better reflects the complexity of the asthmatic condition. Maybe the old adage ''keep it simple (stupid),'' cannot still be applied to asthma biomarkers.

References

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