INAHTA Brief

Issue 2021/008

Title Nasal nitric oxide (NO) measurement as a diagnostic test for primary ciliary dyskinesia (PCD)

Agency HAS, French National Authority for Health (Haute Autorité de santé)
5 avenue du Stade de France – F 93218 La Plaine Cedex, France
Tel.: +33 (0)1 55 93 70 00, contact.seap@has-santé.fr, www.has-sante.fr

Reference ISBN number: 978-2-11-155644-7, link to full report: https://www.has-sante.fr/jcms/p_3169291/fr/mesure-du-monoxyde-d-azote-no-nasal-pour-le-diagnostic-de-dyskinesie-ciliaire-primitive

Aim

Assess the diagnostic performances and the clinical usefulness of nasal nitric oxide (NO) measurement as a diagnostic test for primary ciliary dyskinesia (PCD), and describe the practice requirements for the test, in view of its reimbursement by the National Health Insurance.

Conclusions and results

All the data collected converge towards the fact that nasal NO measurement can play a role as first-line test in the PCD diagnostic strategy in patients presenting with symptoms of the disease. A positive test result (low nasal NO value) supports the suspected diagnosis of the disease and other tests can be offered to confirm the diagnosis. However, a "negative" result (normal nasal NO value) is not sufficient to rule out PCD if the disease is strongly suspected, in which case other tests are routinely offered to patients. According to professional bodies, grey zone results ("subnormal" nasal NO concentration) must be checked by a second measurement. It should be noted that this summary is based on moderate-certainty evidence or on expert opinion. Assessment of the diagnostic performances of this test only highlighted one bias-free prospective diagnostic study, which nevertheless shows good sensitivity (0.99; 95% CI from 0.92 to 1.00) and poor specificity (0.75; 95% CI from 0.64 to 0.84), in favour of the position of the test in the diagnostic pathway described above. Also, no data from the literature on the clinical usefulness of this measurement have been identified. However, all the stakeholders consulted agree on its importance in the diagnostic process. For half of them, this test is also believed to have an impact on therapeutic management (which, as there is currently no curative treatment, only treats the symptoms or comorbidities).

Concerning practice requirements, the literature and professional bodies agree on the whole or for the most part, that the measurement method to prioritize in adults and cooperative children (generally over the age of five), is the velum closure method. In children who are unable to undergo velum closure, the tidal breathing method can be offered. According to the same elements, it was also seen that the currently recommended measurement flow rate is between 0.25 and 3 l/min and that a chemiluminescence-based analyser should preferably be used. Finally, this test is to be carried out in a specialist centre, or in a room in which lung function tests are carried out, with normal ambient NO concentration, by staff trained in this technique.

Recommendations

The HAS recommended reimbursement of nasal NO measurement for the diagnosis of PCD by the National Health Insurance under specific conditions, which are presented in detail in chapter 4 of the full assessment report.

Methods

The rapid assessment method was used, and included a critical analysis of the synthetic literature and collection of the standpoint of a group of professional bodies and patients' associations questioned as stakeholders. In more details, two good practice guidelines, one national healthcare protocol, two systematic reviews with meta-analysis and, for the practice requirements part, two standard techniques were analysed. The results from their critical assessment were completed by the substantiated position of five professional bodies and one patients' association. All of these elements were compiled in a report which was submitted to the HAS Board directly for approval.

Further research/reviews required

Group work must be undertaken to define the measurement cut-off for ranking results (for separating patients with the disease from those without the disease) based on consensus.

Written by

Irena Guzina, HAS (French National Authority for Health - Haute Autorité de santé), France.