Kliiniline küsimus nr 2d

Kas astma kahtlusel tuleks diagnostimiseks kasutada järgmist meetodit vs meetodi mittekasutamisega: hingamisteede põletikumarkerite määramine

Kokkuvõte, sh kriitiliste tulemusnäitajate kaupa:

Süsteemiliselt ülevaateid hingamisteede põletikumarkerite kasutamise kohta astma diagnoosimisel kandsid PubMed andmebaas ja NICE ja Canadian Toracic Society. Igaüks temast avaldavat süsteemilist ülevaadet FeNO kasutamise kohta seostas diagnoosimisel tegutsel sekkuma. NICE Diagnostic assessment report 2013 ja CTS Guideline update 2012. Lõpetades süsteemilise ülevaade võimalikutest kohtades liitumise rõhu eksponiitse kasutamise kohta täiskasvanutel astma diagnoosimisel, NICE poolt soovitatakse FeNO määramist astma diagnoosimisel ühe võimaluseks teatud juhtudel koos teiste diagnoosimistaktikatega (NICE diagnostics guidance [DG12]).

Ravijuhendid

Põletikumarkerite kasutamine astma diagnoosimisel: üldiselt ravijuhendites soovitused, et võib neid määramist kasutada, aga nende kasulikkus diagnoosimisel ei ole teada. NICE poolt soovitatakse FeNO määramist astma diagnoosimisel ühe võimalusena teatud juhtudel koos teiste diagnoosimistaktikatega (NICE diagnostics guidance [DG12]).

Eraldi FeNO-teemaline ATS juhend (vastavalt GRADE): tugev soovitus (mõõdukas kvaliteediga tõendusmaterjal) FeNO kasutamiseks hingamisteede eosinofiilise põletiku diagnoosimisel (In the setting of chronic inflammatory airway disease including asthma, conventional tests such as FEV(1) reversibility or provocation tests are only indirectly associated with airway inflammation. Fe(NO) offers added advantages for patient care including, but not limited to (1) detecting of eosinophilic airway inflammation, (2) determining the likelihood of corticosteroid responsiveness, (3) monitoring of airway inflammation to determine the potential need for corticosteroid, and (4) unmasking of otherwise unsuspected nonadherence to corticosteroid therapy.)

Soovitused ravijuhendites põletikumarkerite kasutamise kohta ravi tiitrimiseks/astma kontrolli hindamiseks on erinevad:

1) rõga eosinofiilia
- määra vaieldisaliseeritud keskuses >18a keskmise ja raske astma korral GKS annuse tiitrimiseks (Canada 2012)
- tugev soovitus, mõõdukas tõendusmaterjal

2) FeNO

- ruut jaoks kasutamiseks ei soovitata (Canada 2012, SIGN-2012)

Süsteemilised ülevaateid

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<td>25 kohorturungut FeNO diagnostikaks kasutamise kohta. Kokkuvõte palun vt tabel 22</td>
<td>NICE Diagnostic assessment report 2013 <a href="http://www.nice.org.uk/guidance/dg12/resources/measuring-">http://www.nice.org.uk/guidance/dg12/resources/measuring-</a></td>
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INTRODUCTION: The gold-standard method for the diagnosis of exercise-induced bronchospasm (EIB) is an exercise test combined with spirometry. However, this test is expensive, time consuming and requires specialized equipment and trained personnel. Exhaled nitric oxide (eNO) is a fast, easy, noninvasive method for the diagnosis of EIB. The aim of the present study was to assess the accuracy of the measurement of eNO for the diagnosis of EIB through a systematic review of the literature.

METHODS: A search was carried out in the PubMed, Lilacs, SciELO and SCOPUS databases by two independent researchers.

RESULTS: Fifty-six papers were found. Following the application of the eligibility criteria to the title, abstract and text, six papers remained for analysis. There was a significant heterogeneity in sex ($X^2=56.44$, $p=0.000$) and clinical spectrum ($X^2=504.00$, $p=0.000$) between studies. In children between 3.8 and 7.8 years old a cutoff point $>28$ppb EIB can be ruled in and in children between 5 and 16 years old at a cutoff point $<20$EIB can be ruled out. For adults a cutoff point $<7$EIB can be ruled out and it can be ruled in with a cutoff point $>12$. Four papers reported negative predictive values above 88%.

CONCLUSION: The measurement of eNO seems to be effective for ruling in and ruling out EIB in some specific groups. Therefore, the measurement of eNO levels could be an important tool to safely avoid the need for an exercise test when the result is negative, reducing the individual and economic impact of this disease.
of inhaled corticosteroids (mean difference 140.18 μg, 95% CI 28.94 to 251.42; p=0.014). It was concluded that tailoring of asthma treatment based on sputum eosinophils is effective in decreasing asthma exacerbations. However, tailoring of asthma treatment based on FeNO levels has not been shown to be effective in improving asthma outcomes in children and adults. At present, there is insufficient justification to advocate the routine use of either sputum analysis (due to technical expertise required) or FeNO in everyday clinical practice.

**BACKGROUND:**

Asthma severity and control can be measured both subjectively and objectively. Sputum analysis for evaluation of percentage of sputum eosinophilia directly measures airway inflammation, and is one method of objectively monitoring asthma. Interventions for asthma therapies have been traditionally based on symptoms and spirometry.

**OBJECTIVES:**

To evaluate the efficacy of tailoring asthma interventions based on sputum analysis in comparison to clinical symptoms (with or without spirometry/peak flow) for asthma related outcomes in children and adults.

**SEARCH STRATEGY:** The last search was on 31 October 2006.

**SELECTION CRITERIA:**

All randomised controlled comparisons of adjustment of asthma therapy based on sputum eosinophils compared to traditional methods (primarily clinical symptoms and spirometry/peak flow).

**MAIN RESULTS:**

Three adult studies were included; these studies were clinically and methodologically heterogenous (use of medications, cut off for percentage of sputum eosinophils and definition of asthma exacerbation). There were no eligible paediatric studies. Of 246 participants randomised, 221 completed the trials. In the meta-analysis, a significant reduction in number of participants who had one or more asthma exacerbations occurred when treatment was based on sputum eosinophils in comparison to clinical symptoms; pooled odds ratio (OR) was 0.49 (95% CI 0.28 to 0.87); number needed to treat to benefit (NNTB) was 6 (95% CI 4 to 32). There were also differences between groups in the rate of exacerbation (any exacerbation per year) and severity of exacerbations defined by requirement for use of oral corticosteroids but the reduction in hospitalisations was not statistically significant. Data for clinical symptoms, quality of life and spirometry were not significantly different between groups. The mean dose of inhaled corticosteroids per day was similar in both groups and no adverse events were reported. However sputum induction was not always possible.

**AUTHORS’ CONCLUSIONS:**

Tailored asthma interventions based on sputum eosinophils is beneficial in reducing the frequency of asthma exacerbations in adults with asthma. This review supports the use of sputum eosinophils to tailor asthma therapy for adults with frequent exacerbations and severe asthma. Further studies need to be undertaken to
strengthen these results and no conclusion can be drawn for children with asthma.

**OBJECTIVES:**

To evaluate the efficacy of tailoring asthma interventions based on exhaled nitric oxide in comparison to clinical symptoms (with or without spirometry/peak flow) for asthma related outcomes in children and adults.

**SEARCH STRATEGY:**

We searched the Cochrane Airways Group Specialised Register of Trials, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE and reference lists of articles. The last search was completed in December 2006.

**SELECTION CRITERIA:**

All randomised controlled comparisons of adjustment of asthma therapy based on exhaled nitric oxide compared to traditional methods (primarily clinical symptoms and spirometry/peak flow).

**DATA COLLECTION AND ANALYSIS:**

Results of searches were reviewed against pre-determined criteria for inclusion. Relevant studies were independently selected in duplicate. Two authors independently assessed trial quality and extracted data. Authors were contacted for further information but none were received. Data was analysed as "intervention received" and sensitivity analyses performed.

**MAIN RESULTS:**

Four (2 adult and 2 paediatric) studies were included; these studies differed in a variety of ways including definition of asthma exacerbations, FeNO cut off levels and duration of study. Of 356 participants randomised, 324 completed the trials. In the meta-analysis, there was no difference between groups for the primary outcome of asthma exacerbations or for other outcomes (clinical symptoms, FeNO level and spirometry). In post-hoc analysis, a significant reduction in mean final daily dose inhaled corticosteroid per adult was found in the group where treatment was based on FeNO in comparison to clinical symptoms; WMD -282.46 (95% CI -422.08 to -142.84). There was no difference in ICS dose between the groups in the overall daily dose in the adult studies or in the paediatric studies.

**AUTHORS' CONCLUSIONS:**

Tailoring the dose of inhaled corticosteroids based on exhaled nitric oxide in comparison to clinical symptoms was carried out in different ways in the four studies that were found, and the results show only modest differences. The role of utilising exhaled nitric oxide to tailor the dose of inhaled corticosteroids is currently uncertain.