Exhaled Markers in Asthma during Exacerbations.

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON26310

Source
Nationaal Trial Register

Brief title
EMAIL

Health condition

Asthma
Exacerbation
Astma
Exacerbatie

Sponsors and support

Primary sponsor: Academic Medical Centre, University of Amsterdam.
Source(s) of monetary or material Support: Chiesi Pharmaceuticals

Intervention

Outcome measures

Primary outcome

Breathprints of volatile organic compounds which are associated with loss of asthma control (deterioration in symptoms and lung function) after interruption of inhaled steroid therapy.

Secondary outcome

1. The critical VOCs of these breathprints in exhaled air by gas chromatography and mass spectrometry (GC-MS);

2. The individual biomarkers in sputum, blood and EBC that are associated with asthma control and electronic nose and GC-MS breathprints;

3. The effect of loss of asthma control by interruption of inhaled steroids on haemostatic activity;

4. The association between markers of coagulation, inflammation and exhaled molecular profiles assessed by electronic nose and GC-MS.

Study description

Background summary

Rationale:

In asthma, symptoms and lung function are only moderately associated with a change in airways inflammation, as in a period of loss of control or exacerbation. Therefore, there is a need for biomarkers that reflect inflammation more directly and that are easy to obtain. Direct
on-line assessment of exhaled air volatile organic compounds (VOCs) may avoid the need of special tests in expert centres and will particularly be suitable in primary care and for the socalled
poor-perceivers of exacerbation symptoms.
The current study will assess the ability of exhaled breath molecular profiling using an electronic nose and gas chromatography and mass spectrometry to discriminate breath molecular profiles (breathprints) from asthma patients during controlled and uncontrolled periods. For this purpose, an exacerbation will be induced by interruption of inhaled corticosteroids.

Hypothesis:
We postulate that exhaled breathprints as measured by electronic nose:

1. Are associated with the level of asthma control and;

2. Are associated with an inflammatory profile in induced sputum and blood in steroiddependent
controlled and uncontrolled phases of the disease.

Objective:

1. To identify breathprints of volatile organic compounds which are associated with loss of asthma control (deterioration in symptoms and lung function) after interruption of inhaled steroid therapy.

2. To examine the critical VOCs of these breathprints in exhaled air by gas chromatography and mass spectrometry (GC-MS).

3. To identify individual biomarkers in sputum, blood and EBC that are associated with asthma control and electronic nose and GC-MS breathprints.

4. To examine the effect of loss of asthma control by interruption of inhaled steroids on haemostatic activity.

5. To examine whether there is an association between markers of coagulation, inflammation and exhaled molecular profiles assessed by electronic nose and GC-MS.

Study design:
14 weeks prospective follow-up study. Reduction of clinical control and reestablishment of control will be obtained by cessation and restoration of inhaled steroids.

Study population:
30 patients with mild to severe persistent asthma using inhaled corticosteroids.

Intervention:

Breath measurements by electronic nose platform and GC-MS and sputum and blood biomarkers will be monitored at baseline, and during withdrawal and restoration of inhaled steroids.

Main study parameters/endpoints:
Change in eNose breathprint at loss of control compared to stable condition, after completion of 8 weeks steroid withdrawal phase.

Nature and extent of the burden and risks associated with participation, benefit and

group relatedness:

Patients will interrupt regular inhaled corticosteroids. This will cause a
transient loss of asthma control. The model that is used in this study proved to be safe.

Study objective

We postulate that exhaled molecular profiling obtained from ‘breathprints’ by electronic nose:

1. Is associated with the level of asthma control and;

2. Is associated with an inflammatory profile in induced sputum and blood in steroiddependent
controlled and uncontrolled phases of the disease.

Study design

Visit 1: Screening at week -12 to -2;

Visit 2: Baseline at week 0;

Visit 3: Exhaled breath at week 4;

Visit 4: Exacerbation at week X or 8;

Visit 5: Remission at week X+4 or 12.

Intervention

Cessation of inhaled steroids during 8 weeks.

Contacts

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Eligibility criteria

Inclusion criteria

1. Age >18 years;

2. Mild to moderately severe persistent asthma according to the criteria GINA [2]:

A. Recurrent wheezing and/or chest tightness and/or shortness of breath AND;

B. Airway hyperresponsiveness, indicated by a positive methacholine or histamine challenge with PC20 < 8 mg/ml anytime in the past 5 years OR;

C. 12% reversibility in FEV1 on salbutamol in the past 5 years.

3. Using at least a daily dose of inhaled corticosteroids (<= 500 ug ICS fluticasone or equivalent);

4. Either allergic or non-allergic to a panel of common inhaled allergens;

5. Controlled asthma according to the criteria by GINA [2]: All of the following:

A. Daytime symptoms less than twice/week;

B. No limitations of activities;

C. No nocturnal symptoms/awakening;

D. Need for reliever/rescue treatment less than twice/week;

E. PEF or FEV1 80% predicted;

F. No exacerbations in the past year.

6. OR Partly controlled asthma according to the criteria by the GINA [2]: Any of the following characteristics present in any week:

A. Daytime symptoms more than twice/week;

B. Limitations of activities;

C. Nocturnal symptoms/awakening;

D. Need for reliever/rescue treatment more than twice/week;

E. PEF or FEV1 < 80% predicted.

7. And exacerbations: one or more in the past 2 years. An exacerbation is defined as at least one of three criteria [17]:

A. Start of systemic corticosteroids, or increase from a stable maintenance dose for at least 3 days;

B. Hospitalization or ER visit because of asthma, requiring systemic corticosteroids;

C. Deterioration of symptoms, lung function and/or rescue bronchodilators > 2 days leading to ER or GP visit because of asthma, not requiring systemic corticosteroids, but an increase/change in medication to prevent the exacerbation from becoming severe.

8. Non-smoking or stopped smoking more than 12 months ago and a total maximum of 5 pack years;

9. No other clinically significant abnormality on history and clinical examination;

10. Able to give written and dated informed consent prior to any study-specific procedures.

Exclusion criteria

1. Change in the dose of ICS within 4 weeks prior to screening;

2. A course of oral corticosteroids, antibiotics or a respiratory infection within 4 weeks prior to the study;

3. Use of ipratropium, anti-IgE or oral corticosteroids;

4. Pregnancy;

5. Concomitant disease or condition which could interfere with the conduct of the study, or which treatment might interfere with the conduct of the study, or which would, in the opinion of the investigator, pose an unacceptable risk to the patient in this study;

6. Unwillingness or inability to comply with the study protocol for any other reason.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	06-03-2012
Enrollment:	30
Type:	Anticipated

Ethics review

Positive opinion

Date:	02-03-2012
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL3172
NTR-old	NTR3316
Other	METC AMC : 2011_082#B201152
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Study results

Summary results
N/A