

Nebulized morphine for breathlessness in chronic obstructive pulmonary disease

Submission date 07/03/2017	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 23/03/2017	Overall study status Completed	☐ Statistical analysis plan ☒ Results
Last Edited 12/07/2018	Condition category Respiratory	☐ Individual participant data

Plain English summary of protocol

Background and study aims

Chronic obstructive pulmonary disease (COPD) is the name given to a collection of diseases which affect the lungs. It is characterised by breathlessness, cough and excess mucus production and is often caused by smoking. Almost all patients with COPD experience dyspnea (difficulty breathing) in their last year of life. Opioid medications (pain relievers such as morphine) are usually offered for end of life care at this stage of the disease. Some small-scale studies support the use of nebulisers (machines which turn drugs into a mist so they can be inhaled into the lungs) to deliver morphine as an alternative treatment for dyspnea. Reports show that delivering morphine in this way can cause less side effects, such as constipation or dizziness. Unfortunately, the effectiveness of nebulized morphine has not been confirmed in larger studies. Recent studies have shown that a large amount of opioid receptors (proteins that bind to opioids and send signals to the brain) are found in the lining of the large airways (windpipe and bronchi - tubes into the lungs). The aim of this study is to compare the effectiveness of nebulized morphine and nebulized saline (salt water), both delivered by the same inhalation system calibrated to target large airways, in treating dyspnea in severe COPD.

Who can participate?

Patients over 50 years old who have severe COPD with dyspnea.

What does the study involve?

During an eight-day stay in hospital, patients receive four days of treatment with nebulized morphine and four days of treatment with nebulized saline in a random order using a special inhalation system designed to target the large airways (wind pipe and bronchi - tubes into the lungs). The intensity of breathlessness is rated on a continuous, 100 mm scale by patients. In addition, the patient's exercise tolerance is measured by a number reading test, which involves asking patients to read numbers aloud for 60 seconds as quickly and clearly as possible, and lung function is measured using specialised equipment.

What are the possible benefits and risks of participating?

Participants may benefit from an improvement to their breathlessness symptoms. There is a

small risk of side effects from the nebulized morphine, such as cough, bitter taste or a pricking sensation in the throat. In rare cases patients may develop tightening of the airways or an allergic reaction.

Where is the study run from?

University Clinical Centre in Gdansk (Poland)

When is the study starting and how long is it expected to run for?

May 2012 to December 2016

Who is funding the study?

Medical University of Gdańsk (Poland)

Who is the main contact?

Dr Piotr Janowiak

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Contact information

Type(s)

Scientific

Contact name

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Additional identifiers

Protocol serial number

ST-553

Study information

Scientific Title

Dosimetrically administered nebulized morphine for breathlessness in very severe chronic obstructive pulmonary disease

Study objectives

2% morphine hydrochloride water solution, nebulized by dosimetric nebulizer calibrated to target large airways, is superior to 0.9% NaCl delivered by the same equipment in treating severe dyspnea in chronic obstructive pulmonary disease.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Independent Bioethics Committee for Research of Medical University of Gdansk, 25/06/2012, ref: NKBBN/269/2012

Primary study design

Interventional

Study design

Single-centre randomized double-blind controlled, cross-over trial

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Breathlessness in very severe chronic obstructive pulmonary disease

Interventions

Patients are randomly assigned to two treatment sequences using online software for simple randomization (Research Randomizer ver. 3.0).

Each sequence lasts for eight days and consists of two periods, each lasting four days. There is no wash-out between periods. During each period different drug is nebulized: 2% morphine hydrochloride water solution or 0.9% NaCl. Both substances are delivered once daily, in a titrated manner, with the same dosimetric nebulizer until the clinically significant response (i.e. ≥ 20 mm drop in VAS) is reached or substantial side effects occur. MF doses for 4 consecutive days are: 1, 2, 3 and 5 mg.

Intervention Type

Drug

Phase

Not Applicable

Drug/device/biological/vaccine name(s)

Morphine hydrochloride

Primary outcome(s)

Intensity of breathlessness, measured by visual analogue scale (VAS) 15-30 minutes before the nebulisation, immediately after the nebulisation and 15 minutes, 30 minutes, 1, 2, 3 and 4 hours after the nebulization.

Key secondary outcome(s)

1. Most effective dose of morphine is noted when ≥ 20 mm drop in VAS is detected
2. Exercise tolerance is measured using the Wilcock's test 15-30 minutes before and 2 hours

after nebulization

3. Safety is assessed by measuring heart rate, respiratory rate and peripheral capillary oxygen saturation at the same time points as VAS, and spirometry and peak expiratory flow (PEF) one hour before and one hour after nebulisation

Completion date

20/12/2016

Eligibility

Key inclusion criteria

1. Age above 50 years
2. COPD group D, according to 2013 Global Initiative For Chronic Obstructive Lung Disease (GOLD) guidelines
3. Stage IV airflow limitation i.e. FEV1% < 30%, according to 2011 GOLD classification
4. Breathlessness rated 3 or 4 in the modified Medical Research Council scale (mMRC) breathlessness scale
5. Current non-smoker
6. Written informed consent

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Mixed

Sex

All

Key exclusion criteria

1. Other coexisting severe chronic lung diseases, such as lung cancer
2. Breathlessness caused by other than COPD chronic diseases, such as heart failure or renal failure
3. Inability to give informed consent
4. previous history of respiratory depression after opioid administration or allergic reactions to opioids
5. Ongoing opioid treatment for any indication
6. COPD exacerbation within the last month

Date of first enrolment

04/03/2014

Date of final enrolment

01/03/2016

Locations

Countries of recruitment

Poland

Study participating centre

University Clinical Centre

Department of Allergology and Pneumonology

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Sponsor information

Organisation

Medical University of Gdańsk

ROR

<https://ror.org/019sbgd69>

Funder(s)

Funder type

University/education

Funder Name

Gdański Uniwersytet Medyczny

Alternative Name(s)

Medical University of Gdańsk, MUG

Funding Body Type

Government organisation

Funding Body Subtype

Local government

Location

Poland

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are/will be available upon request from Piotr Janowiak (33033@gumed.edu.pl)

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	11/12/2017		Yes	No