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A study to assess the benefit of modafinil in COPD with type-2 respiratory failure

Submission date
04/11/2015

Recruitment status
Stopped

Registration date
11/11/2015

Overall study status
Stopped

Last Edited
18/02/2022

Condition category
Respiratory

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Chronic obstructive pulmonary disease (COPD) is the name used to refer to a number of progressive, devastating and debilitating lung diseases, which includes chronic bronchitis, emphysema and chronic obstructive airways disease. People that have COPD typically feel breathless after physical activity, have a persistent cough with phlegm and suffer frequently from chest infections. Modafinil is a drug licensed for the excessive sleepiness disorder of "narcolepsy". This tablet has been given to patients with type-2 respiratory failure with COPD. It has found to lead to an improvement in blood oxygen levels and a reduction in blood carbon dioxide levels. This tablet has been given for this condition for 8-10 years but permission to continue to do so is being restricted without formal study data. To take this treatment forward, a formal study needs to be run on a group of patients with raised blood carbon dioxide levels to monitor the improvement under study conditions.

Who can participate?
Patients aged 40-86 with long term high blood carbon dioxide levels and COPD who are not using a nasal ventilator.

What does the study involve?
At the start of the study, each participants medical history is taken and they undergo blood tests. They also complete questionnaires; these ask about sleepiness, respiratory symptoms and also symptoms of anxiety or depression. They are also asked to take a lung function test, have their arterial blood gases taken and have their overnight blood oxygen levels measured (overnight oximetry). Once these tests are complete, each participant is randomly allocated into one of two groups. Those in group 1 are given 200mg of modafinil in pill form every morning in addition to their standard care for 40 days. Those in group 2 (the control group) receive their standard care only. All participants then visit the study centre on three further occasions, once within 10-14 days of the treatment starting, once within 1 month of the treatment starting and once after 40 days of treatment. During these visits oxygen saturation levels, lung function and arterial blood gases are all measured and another questionnaire, identical to the one at the start of the study, is completed. Finally, within one week of the end of the study, all participants receive a follow-up telephone call.

What are the possible benefits and risks of participating?
The potential benefits include reduced blood carbon dioxide levels. Previous studies have shown improvements in overnight sleeping oxygen levels. Risks include rashes, nausea or vomiting. Patients who drink heavily should avoid modafinil along with those with significant liver or kidney disease.

Where is the study run from?
St Helier Hospital, Surrey (UK)

When is the study starting and how long is it expected to run for?
October 2015 to February 2021

Who is funding the study?
St Helier Hospital (charity account)

Who is the main contact?
Dr Veronica Varney
veronica.varney@nhs.net

Contact information

Type(s)
Scientific

Contact name
Dr Veronica Varney

Contact details
Respiratory Dept,
St Helier Hospital
Wrythe Lane
Carshalton
Surrey
United Kingdom
SM51AA
0208 296 2401
veronica.varney@nhs.net

Additional identifiers

Clinical Trials Information System (CTIS)
2013-005107-13

Protocol serial number
Protocol Number: 002083935121

Study information

Scientific Title

A study to assess the benefit of modafinil in COPD with type-2 respiratory failure: an open randomised study

Acronym
MICOPD

Study objectives
The proposed study is a “proof of concept” open randomised study to standardise the data collection so that pilot data can be collected in a standardised fashion from which bigger studies can be planned according to the study findings.

1. Primary objective: assess the efficacy of modafinil on arterial oxygen improvement and blood carbon dioxide reduction at 10 days and 40 days of treatment
2. Secondary objectives: assess the effects of modafinil on day and overnight oximetry measurements and quality of life measures (HAD, BODE, ESS, MRC5P) and spirometry

Ethics approval required
Old ethics approval format

Ethics approval(s)
NRES Committee London - Surrey Borders Research Ethics Committee (REC) London Centre, 27 /01/2015, ref: 14/LO/2225

Study design
Open randomised study

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
COPD with type-2 respiratory failure

Interventions
Visit 1: Each participants medical history is taken and baseline blood tests done. Participants also complete questionnaires, take a lung function test, have arterial blood gas and overnight oximetry assessed. Each participant is then randomly allocated to one of two groups. Those in group 1 are given oral modafinil (200mg) every morning and standard care for 40 days. Those in group 2 (control) are given their usual standard care.
Visit 2 takes place within 10-14 days of study start and oxygen saturation levels, lung function, arterial blood gas and overnight oximetry are assessed. Questionnaires are also completed.
Visits 3 takes place 1 month after the start of the study. Oxygen saturation levels, lung function, arterial blood gas and overnight oximetry are assessed once more and questionnaires completed.
Final visit takes place after 40 days of treatment. after 40 days of treatment where all measurements are taken a final time.
All participants receive a final follow-up phone call within one week of the end of the study.

Intervention Type
Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Modafinil 200mg mane

Primary outcome(s)
The primary efficacy endpoints for the trial will be a change from baseline in arterial oxygen and carbon dioxide levels at 10 days (steady state drug levels) and 40 days

Key secondary outcome(s))
Secondary endpoints will be change from baseline at 10 and 40 days in:
1. Spirometry (FEV1, FVC, PEFR)
2. Symptom score on the MMRC Scale.
3. Mean overnight oxygen saturations
4. Epworth sleepiness score
5. Respiratory rate at rest
6. BODE score and GAD-7 score
7. Resting oxygen saturation on air
8. Occurrence of hospital admissions or exacerbations

Completion date
30/06/2021

Reason abandoned (if study stopped)
The study was terminated in January 2021 as enrolment stopped following public health guidance and did not resume as the risk for these patients with advanced COPD with COVID-19 exposure was extremely high.

Eligibility

Key inclusion criteria
1. Male or menopausal females aged 40 – 86 years
2. Negative pregnancy test in women at entry to study with a raised FSH level if under 60yrs old
3. Acceptable ECG on entry to study
4. An established clinical history consistent with COPD and known chronic hypercapnic respiratory failure on standard treatments
5. Arterial gases confirming known hypercapnia with PaO2 below 8.1kPa and arterial carbon dioxide level >7.5 kPa in the absence of an exacerbation
6. No use of oxygen or nasal ventilator nor CPAP machine
7. Able to comply with questionnaires and assessments
8. No history of significant renal or liver failure or uncontrolled hypertension and epilepsy that would preclude the use of modafinil
9. No history of significant psychological disturbances
10. No drugs that are likely to interact with modafinil

11. No evidence of current left cardiac failure
12. Compliant with all standard COPD treatments including inhalers, nebulizers and theophyllines and steroids to optimize COPD care

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Key exclusion criteria
1. Hypercapnic respiratory failure only during an acute COPD exacerbation
2. A recognized coexisting respiratory disorder that in the opinion of the investigator would put the patient at risk or invalidate the study outcome measures
3. Epilepsy, significant psychological disorders, un-controlled hypertension, known significant liver or kidney disease
4. Non-menopausal women including pregnant and breast feeding women or those sexually active and taking contraception (both oral and barrier method). This will be checked by a FSH level also

Date of first enrolment
21/10/2015

Date of final enrolment
30/06/2021

Locations

Countries of recruitment
United Kingdom

Study participating centre
St Helier Hospital
Wrythe Lane
Carshalton
Surrey
United Kingdom
SM5 1AA,

Sponsor information

Organisation
St Helier Hospital, R&D Dept

ROR
https://ror.org/019hb9542

Funder(s)

Funder type
Not defined

Funder Name
St Helier Hospital (charity account)

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 Dr Veronica Varney (veronica.varney@nhs.net). The full data will only be available when the study ends. The data is anonymous as per ethics requirements.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No