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The effect of peri-operative anti-inflammatory treatment on postoperative muscle weakness and muscle fatigue in elderly elective surgery patients

Submission date
20/09/2011

Recruitment status
No longer recruiting

Registration date
09/11/2011

Overall study status
Completed

Last Edited
30/10/2012

Condition category
Musculoskeletal Diseases

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

Plain English summary of protocol

Background and study aims
Recently, studies have shown that elderly patients tend to suffer more from muscle weakness and muscle fatigue post-surgery than compared to younger patients. Also, we found evidence that muscle fatigue caused by inflammation is due to local processes (such as muscle atrophy and loss of contractibility), acting at the muscle itself. The aim of this study is to evaluate how different treatments work to reduce postoperative muscle weakness and muscle fatigue in elderly elective abdominal surgery patients.

Who can participate?
All elderly (male or female, aged >60 years) elective abdominal surgery patients are eligible.

What does the study involve?
Participants will be randomly allocated to either one of three drugs (including a drug which is a tumour necrosis factor-alpha (TNF-a) inhibitor) or a dummy drug (placebo), before during and after surgery.

What are the possible benefits and risks of participating?
We expect that the treatment will reduce the postoperative muscle weakness and fatigue. Patients will be excluded when contra-indications for the use of the study-medication exists. A recent study showed that TNF-a treatment did not increase the risk for surgical site infection.

Where is the study run from?
The leading centre is the Frailty in Aging research group of the Vrije Universiteit Brussel, in collaboration with the Universitair Ziekenhuis Brussel (University Hospital of the Vrije Universiteit Brussel), Belgium

When is the study starting and how long is it expected to run for?
October 2011 to September 2013.

Who is funding the study?
Frailty in Ageing research group of the Vrije Universiteit Brussel, in collaboration with the Universitair Ziekenhuis Brussel (University Hospital of the Vrije Universiteit Brussel), Belgium

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
N/A

Study information

Scientific Title
The effect of peri-operative anti-inflammatory treatment on postoperative muscle weakness and muscle fatigue in elderly elective surgery patients: a double blinded randomized placebo-controlled trial

Study objectives
Could Pharmacological interventions designed to prevent inflammation-induced structural changes in the skeletal muscle reduce postoperative muscle weakness and muscle fatigue in elderly elective abdominal surgery patients?

Ethics approval required
Old ethics approval format

Ethics approval(s)

Brussels University Hospital Medical Ethical Committee (Universitair Ziekenhuis Brussel)

Study design
Double blinded randomised placebo-controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet

Health condition(s) or problem(s) studied
Post-operative muscle weakness, fatigue and inflammation

Interventions
Three different pharmacological interventions, each counter-acting different steps of the inflammation-induced proteolytic pathway in skeletal muscle, will be compared to placebo control:
1. Tumor necrosis factor-alpha (TNF-a) inhibitor [50mg Etanercept by subcutaneous (SC) injection 1 day preoperative, N=25)
2. Calpain inhibitor (16mg Molsidomine daily by mouth (per os), starting 1 day preoperative until 1 week postoperative, N=25)
3. Nuclear factor kappa-light-chain-enhancer of activated B cells (NF-eB) downregulator (267mg Fenofibrate daily, starting 1 day preoperative until 1 week postoperative N=25)
4. Placebo control (N=25)

Intervention Type
Other

Phase
Not Applicable

Primary outcome measure
1. Muscle performance: Maximal handgrip strength, muscle fatigue resistance and grip work will be assessed one day before surgery, and 2, 4, 8 and 30 days post-surgery
2. Self-perceived fatigue and pain: self-perceived fatigue (Fatigue subscale of the Profile of Mood State) and pain (Visual Analogue Scale) will be assessed one day before surgery, and 2, 4, 8 and 30 days post-surgery
3. Inflammation: circulating levels of pro- and anti-inflammatory cytokines and their intra-cellular

gene expression in Peripheral Mononuclear Blood Cells. Overnight fasting serum samples will be collected from the non-dominant arm at one day before surgery, and 2, 4, 8 and 30 days post-surgery.

Secondary outcome measures
Occurrence of adverse reactions and postoperative complications:
All participants will be questioned and monitored for adverse reactions (potentially related to the study medication, i.e. allergies, headache, hypotension) at day 2, 4, 8 and 30 post-surgery.

Occurrence of postoperative complications will be extracted from the patients medical record.

Overall study start date
01/10/2011

Completion date
01/10/2013

Eligibility

Key inclusion criteria
All elderly (male or female, aged > 60 years) elective abdominal surgery patients

Participant type(s)
Patient

Age group
Senior

Sex
Both

Target number of participants
N=100 (N=25 per treatment arm)

Key exclusion criteria
1. Unavailable one day before the surgical intervention
2. Presenting important inflammation preoperatively C-reactive protein (CRP)>10mg/L
3. Unable to understand or execute the test instructions due to cognitive impairment mini mental state examination (MMSE<23 / 30) and/or physical disability
4. Already using selective tumor necrosis factor (TNF)-alpha inhibitors, nitric oxide donors, fibrates, non-steroidal anti-inflammatory drugs (NSAIDs) or corticosteroids or when contra-indications for the use of one of these products exist

Date of first enrolment
01/10/2011

Date of final enrolment
01/10/2013

Locations

Countries of recruitment
Belgium

Study participating centre
Laarbeeklaan 103
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Sponsor information

Organisation
Vrije University Brussels [Vrije Universiteit Brussel] (Belgium)

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Sponsor type
University/education

Website
http://www.vub.ac.be/FRIA

ROR
https://ror.org/006e5kg04

Funder(s)

Funder type
University/education

Funder Name
University of Brussels (Belgium)

Funder Name

Brussels University Hospital (Belgium)

Results and Publications

Publication and dissemination plan
Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Other publications		01/03/2010		Yes	No