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Effects of an exercise programme on asymptomatic monoclonal gammopathies

Submission date
03/05/2018

Recruitment status
No longer recruiting

Registration date
14/05/2018

Overall study status
Completed

Last Edited
06/02/2024

Condition category
Cancer

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Smouldering multiple myeloma (SMM) and monoclonal gammopathy of undetermined significance (MGUS) are premalignant plasma cell conditions that precede the cancer multiple myeloma. Treatment is not administered to SMM or MGUS due to uncertainties about the effectiveness and toxicity (side effects) of existing treatment options. Lifestyle interventions to delay progression, such as exercise, have not been tested and may be beneficial. Population data shows that risk of getting multiple myeloma is reduced by about 20% in those who lead a physically active lifestyle. It is thought that exercise does not stop the initiation of MGUS/SMM, but instead may delay the progression of MGUS/SMM to multiple myeloma. One case study has shown that SMM disease activity can be reversed with exercise. The aim of this study is to assess the feasibility and safety of a progressive, walking-based exercise programme for SMM and MGUS, and to assess the impact of exercise on SMM and MGUS disease activity.

Who can participate?
Patients aged over 18 who have SMM or MGUS

What does the study involve?
Participants' disease activity, physical fitness and quality of life are assessed. Participants will receive a progressive exercise programme plus usual care for 16 weeks. The exercise programme is run at the Royal United Hospitals Bath NHS Foundation Trust and consists of two supervised group classes per week and one session at home. The exercise programme includes cardio, strengthening and balance exercises, and stretching, as recommended by World Health Organisation physical activity guidelines for older adults. Disease activity, physical fitness and quality of life are measured again at 17 weeks.

What are the possible benefits and risks of participating?
There are both benefits and risks to taking part in the study. Benefits include a free exercise programme, feedback on health and fitness measures, £100 cash payment for travel costs and exercise resources to keep after the study. The researchers have designed the project to have the least risk possible, although not all risk is avoidable, for example, participating in a bout of

exercise temporarily increases the risk of having heart problems or getting injured. Overall however, the potential benefits of exercise outweigh the possible negative consequences of exercise.

Where is the study run from?
Royal United Hospitals Bath NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?
October 2017 to December 2019

Who is funding the study?
University of Bath (UK)

Who is the main contact?
1. Dr John Campbell
J.Campbell@bath.ac.uk
2. Miss Annabelle Emery
A.R.Emery@bath.ac.uk

Contact information

Type(s)
Scientific

Contact name
Miss Annabelle Emery

ORCID ID
https://orcid.org/0000-0001-9603-4931

Contact details
Office 4.113 1 West Building,
Department for Health,
University of Bath,
Claverton Down
Bath
United Kingdom
BA2 7AY
+44 (0)1225 383655
a.r.emery@bath.ac.uk

Type(s)
Scientific

Contact name
Dr John Campbell

ORCID ID
https://orcid.org/0000-0001-9989-6158

Contact details

Office 5.123 1 West Building,
Department for Health,
University of Bath,
Claverton Down
Bath
United Kingdom
BA2 7AY
+44 (0)1225 385495
j.campbell@bath.ac.uk

Additional identifiers

Integrated Research Application System (IRAS)
238573

Protocol serial number
IRAS 238573

Study information

Scientific Title
Feasibility of a progressive, walking-based exercise programme for monoclonal gammopathy of undetermined significance and smouldering multiple myeloma: a single-arm pilot trial.

Study objectives
The primary aim of this trial is to evaluate the feasibility and safety of a 16-week progressive, walking-based exercise programme in patients with (i) smouldering multiple myeloma (SMM) and (ii) monoclonal gammopathy of undetermined significance (MGUS).

The secondary aim of this trial is to generate preliminary data on the effects of an exercise programme on (i) disease activity, (ii) fitness, and (iii) quality of life outcomes to inform a future, adequately powered, randomised-controlled trial.

People with SMM and MGUS are at risk of progressing to the cancer multiple myeloma in their lifetime, but care guidelines do not recommend active treatment until multiple myeloma develops. This research is investigating whether a progressive exercise programme can be used to reduce disease activity.

Ethics approval required
Old ethics approval format

Ethics approval(s)
1. NHS Health Research Authority, 20/07/2018, 18/LO/1034
2. University of Bath Research Ethics Approval Committee for Health, 29/08/2018, EP 17/18 210

Study design
Pilot single-centre single-arm Phase I trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Premalignant plasma cell conditions: smouldering multiple myeloma and monoclonal gammopathy of undetermined significance

Interventions
Current intervention as of 25/02/2019:
Treatment arm: 16-week progressive, walking-based exercise programme. The programme will be delivered as two supervised group classes at the Royal United Hospitals Bath NHS Foundation Trust (including treadmill walking, resistance exercise and stretching) and home-based exercises (including one moderate intensity walk and daily balance and stretching exercises) each week, plus usual care.

Previous intervention as of 13/09/2018:
Participants will be randomly allocated to either the treatment or control arm. Opaque envelopes containing group allocation will be sequenced using block randomisation into 'Treatment Arm' = 20 and 'Control Arm' = 20 (sealedenvelope.com).

Treatment arm: 16-week progressive, walking-based exercise programme. The programme will be delivered as two supervised group classes at the Royal United Hospitals Bath NHS Foundation Trust (including treadmill walking, resistance exercise and stretching) and home-based exercises (including one moderate intensity walk and daily balance and stretching exercises) each week, plus usual care.

Control arm: usual care and maintenance of baseline habitual exercise habits.

All participants will be measured at week 0 and 17.

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Treatment arm: 16-week progressive, walking-based exercise programme. The programme will be delivered as two supervised group classes at the Royal United Hospitals Bath NHS Foundation Trust (including treadmill walking, resistance exercise and stretching) and home-based exercises (including one moderate intensity walk and daily balance and stretching exercises) each week, plus usual care.

Control arm: usual care and maintenance of baseline habitual exercise habits, with the option to undertake the exercise programme for 16 weeks after completing their trial period in the control group.

All participants will be measured at week 0 and 17.

Intervention Type
Behavioural

Primary outcome(s)

1. Uptake, measured at week 0 prior to trial period:
1.1. Recruitment rate - the proportion of patients approached who are screened
1.2. Screen-pass rate - the proportion of patients who attend screening that are deemed eligible
1.3. Randomisation rate - the proportion of patients that are randomised
2. Adherence: the proportion of prescribed sessions that are performed, measured in weeks 1-16 in the treatment arm only
3. Compliance: the exercise prescribed vs. exercise completed, measured at weeks 1-16 in the treatment arm only
4. Retention: the proportion of participants who complete both baseline and follow-up measures, measured in week 17
5. Safety: the incidence and severity of adverse events, measured at weeks 0-17

Key secondary outcome(s))
1. Disease activity of SMM and MGUS, measured in week 0 and week 17
2. Physical fitness, measured by cardiopulmonary exercise test in week 0 and week 17
3. Physical activity level, measured by armband activity monitor in week 0 and week 16
4. Body composition, measured by dual-energy x-ray absorptiometry in week 0 and week 17
5. Quality of life, measured by questionnaires (quality of life, sleep, fatigue, frailty) in week 0 and week 17
6. Resting heart rate and blood pressure, measured in week 0 and week 17
7. CRAB indices (calcium, renal function, anaemia, bone health), measured in week 0 and week 17
8. Mechanistic measures (immune, inflammatory and metabolic biomarkers), measured in blood, saliva and urine sampled in week 0 and week 17

Completion date
02/03/2020

Eligibility

Key inclusion criteria
1. Diagnostic criteria:
1.1. SMM. Defined by IMWG criteria as absence of MM defining events or amyloidosis, AND either: (i) serum monoclonal protein (IgG or IgA) >30 g/L OR urinary monoclonal protein >500 mg per 24 h, AND/OR (ii) clonal bone marrow plasma cells 10-60%. People with SMM, given their higher risk of progressing to MM, will initially be prioritised for enrollment into the trial, followed by people with MGUS, described next
OR
1.2. MGUS. Defined by IMWG criteria as absence of end-organ damage attributable to the plasma cell proliferative disorder (such as hypercalcaemia, renal insufficiency, anaemia, and bone lesions [CRAB]), or amyloidosis AND BMPC <10% AND serum M-protein <30 g/L
2. Age >18 years (adults and seniors)

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Other

Lower age limit
18 years

Sex
All

Total final enrolment
20

Key exclusion criteria
1. World Health Organisation (WHO) performance status >1
2. Pregnancy
3. Deemed unsafe to exercise according to the Physical Activity Readiness Questionnaire
4. Any comorbidity that is likely to progress or be exacerbated over the course of the trial period
5. Cognitive impairment deemed a risk by the healthcare team for participation in the trial
6. Unable to understand explanations and/or provide informed consent
7. Any condition and/or behaviour that would pose undue personal risk or introduce bias into the trial

Date of first enrolment
10/09/2018

Date of final enrolment
15/11/2019

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Royal United Hospitals Bath NHS Foundation Trust
Combe Park
Bath
United Kingdom
BA1 3NG

Sponsor information

Organisation
University of Bath

ROR

https://ror.org/002h8g185

Funder(s)

Funder type
University/education

Funder Name
University of Bath

Alternative Name(s)
UniofBath

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
De-identified individual participant data will be made available after publication to those who submit a research proposal that is approved by the Chief Investigator, Dr John Campbell (J. Campbell@bath.ac.uk). Data underlying the publication will be made available from the date of publication for 10 years, at which point it will be destroyed as stated in the University of Bath research data policy. The data will be held in the University of Bath Data Archive.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		05/02/2024	06/02/2024	Yes	No
Basic results		01/07/2021	01/07/2021	No	No
HRA research summary			26/07/2023	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file	version 3.1	19/12/2018	18/08/2022	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes