ISRCTN84866416 https://doi.org/10.1186/ISRCTN84866416

Is there a constitutional 'global' lymphatic disturbance in lymphatic function in patients who develop breast cancer-related lymphoedema (BCRL)?

Submission date
28/11/2013

Recruitment status
No longer recruiting

Registration date
17/12/2013

Overall study status
Completed

Last Edited
03/03/2015

Condition category
Cancer

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

Plain English summary of protocol

Background and study aims
Breast-cancer related lymphoedema is a chronic swelling of the upper limb following surgery to the armpit (axilla) lymph nodes and affects about 1 in 4 women having this type of surgery. Lymphoedema is a late complication of the cancer treatment - this means that it usually develops a few years after treatment. Most (but not quite all) cases of lymphoedema occur within 3 years of surgery. We are trying to understand in what way the drainage of tissue fluid from the arm goes wrong in lymphoedema and why some women get it and others do not, even though they have had the same treatment. Tissue fluid is produced constantly and comes from the very small blood vessels (capillaries) found throughout the body. At the same time as it is formed the fluid is drained away by the lymphatic system so that the amount of fluid in the tissues is held roughly constant. When the tissue fluid cannot drain away quickly enough it builds up and the tissue (in this case the tissues in the arm) swell. We know that the root cause of the lymphoedema is the surgical removal of lymph glands in the armpit region (axilla) but we don't understand why some women develop lymphoedema and others do not. Unexpected research findings from our group have led us to think that some women may be more likely to develop lymphoedema regardless of the type of surgery received, and the purpose of this study is to investigate this. If there is an pre-existing or constitutional lymphatic disturbance, then it should be possible to predict those patients who are at risk before they have the surgery. In order to test this, we intend to investigate women who have already had armpit surgery several years previously and investigate the legs rather than the arms. We will adopt this approach because once the swelling has developed, it is not possible to investigate the arms. A constitutional problem with lymphatic drainage should however also affect the legs.

Who can participate?
Potential patients will be identified by liaising with breast care nurse specialists and lymphoedema nurses. The study requires patients who have had surgery for breast cancer at least 3 years ago, and had surgery to their axilla (armpit) to remove lymph nodes.

What does the study involve?
The patients will be approached and the study will be discussed. A patient information sheet will be given to the patient. The patient will be given a minimum of 24 hours to consider participating in the study. A telephone call will be made to determine whether the patient is willing and to answer any questions. Written informed consent will be obtained by either the researchers or research nurse when the patient attends the study visit. The study involves one visit to Royal Sussex County Hospital, Brighton, or Guys Hospital, London, lasting about half a day. Lymphoscintigraphy is performed, which is a scan involving the injection of a small quantity of a radioactive substance called technetium-99m nanocolloid. The injection is made into the skin of the webspace between the big toe and 2nd toe (the 1st webspace) of each foot - it is briefly painful and may sting a little. The amount of liquid injected is very small, 1/10th of a millilitre (ml), and a very fine needle is used (it has an outer diameter of 0.2 mm). Most people find it tolerable, and bruising is unlikely. The patients then lie down so that a machine called a gamma camera can be used to take pictures of the legs.

What are the possible benefits and risks of participating?
There is a theoretical risk that any injection can cause infection but this is highly unlikely. The procedures will be performed carefully with cleaning of the skin beforehand. The exposure to radiation from the technetium is very low and would, for example, be equivalent to the exposure to the background level of radiation in the environment over a period of 2 weeks in Sussex (or only half a week in Cornwall, where background radiation is higher than anywhere else in England).

Where is the study run from?
Royal Sussex County Hospital (UK).

When is the study starting and how long is it expected to run for?
The study ran from November 2011 to December 2013.

Who is funding the study?
Brighton & Sussex University Hospitals NHS Trust Cancer Fund.

Who is the main contact?
Prof. A.M. Peters
A.M.Peters@bsms.ac.uk

Contact information

Type(s)
Scientific

Contact name
Prof Adrien Peters

Contact details
Professor of Applied Physiology
University of Sussex
Audrey Emerton Building
Eastern Road

Brighton
United Kingdom
BN8 6TA

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
Protocol no. 3 (REC 11/LO/0892)

Study information

Scientific Title
Is there a constitutional 'global' lymphatic disturbance in lymphatic function in patients who develop breast cancer-related lymphoedema (BCRL)? A prospective non-randomised study

Study objectives
We aim to investigate our hypothesis that lower limb quantitative lymphoscintigraphy will be abnormal in a significantly greater proportion of women who have BCRL compared with those who do not after a minimum period of clinical follow-up since surgery of 3 years, indicating a constitutional predisposition to BCRL.

Ethics approval required
Old ethics approval format

Ethics approval(s)
NRES Ethics Committee London (London Bridge), 11/11/11, REC: 11/LO/0892

Study design
Prospective multi-centre observational cohort study

Primary study design
Observational

Secondary study design
Cohort study

Study setting(s)
Hospital

Study type(s)
Screening

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
Lymphoedema, breast cancer

Interventions
Quantitative lymphoscintigraphy.
All patients will undergo lymphoscintigraphy (15 patients with lymphoedema and 15 patients without lymphoedema)

1. Clean the skin and inject 0.1 ml of 99mTc- nanocolloid solution (containing 20 MBq) intradermally in the 1st web-space of both feet using a 25 gauge needle (outer diameter 0.51 mm, Terumo, Belgium).
2. With the participant lying supine, gamma camera images of the lower limbs are obtained at 5, 45, 180 and 240 minutes after injection. The injection depot is also imaged in order to calculate depot clearance rate.

Intervention Type
Other

Phase
Not Applicable

Primary outcome measure
Using quantitative lymphoscintigraphy to establish if there is a disturbance in lower limb lymphatics in patients who have developed breast-cancer related lymphoedema (BCRL) and comparing this with patients who have not developed BCRL after axillary lymph node clearance surgery.

The patients only attend once, which is for the scan (lymphoscintigraphy). The scan takes a total of 3 hours to complete.

Secondary outcome measures
No secondary outcome measures

Overall study start date
30/11/2011

Completion date
31/12/2013

Eligibility

Key inclusion criteria
1. Previous diagnosis of breast cancer and have undergone axillary lymph node clearance
2. Require 15 patients who have developed BCRL and 15 patients who have not developed BCRL
3. No other medical condition which will interfere with research procedures
4. Age range 30-80 years

Participant type(s)
Patient

Age group
Adult

Sex
Female

Target number of participants
30

Key exclusion criteria
1. Male participants
2. Outside age range of 30-80 years
3. Patients receiving vasoactive medication, or any other drugs known to impact on lymphatic function
4. Patients unable to give informed consent
5. Patients attempting to become pregnant or not practising any form of effective contraception
6. Cardiovascular disease (excluding patients with simple hypertension and not on any of the above drugs)

Date of first enrolment
30/11/2011

Date of final enrolment
31/12/2013

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
University of Sussex
Brighton
United Kingdom
BN8 6TA

Sponsor information

Organisation
Brighton and Sussex University Hospitals NHS Trust (UK)

Sponsor details
R&D Management Office
Eastern Road
Brighton
England
United Kingdom
BN8 6TA

Sponsor type
University/education

Website
http://www.bsuh.nhs.uk/research

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Brighton and Sussex University Hospitals NHS Trust (Cancer fund) (UK)

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?
Results article	results	01/04/2015		Yes	No