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LymphSEARCH screening - Risk of lymphoedema after breast cancer treatment

Submission date
14/05/2025

Recruitment status
Recruiting

Registration date
17/05/2025

Overall study status
Ongoing

Last Edited
15/05/2025

Condition category
Circulatory System

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

Plain English summary of protocol

Background and study aims
Lymphoedema is a long-term condition that causes swelling, usually in the arms or legs. It affects around 250 million people worldwide. In Western countries, one of the most common causes is breast cancer treatment. However, it's still unclear why some people develop lymphoedema while others don’t, even after similar treatments. This study, called LymphSEARCH, aims to understand more about why lymphoedema develops in some breast cancer patients and not in others. The goal is to find factors—like types of surgery, genetic traits, anatomy—that may increase or lower the risk of lymphoedema. This could help doctors predict who might develop the condition and improve care for those who already have it.

Who can participate?
The study includes women aged 18 or older who have been diagnosed with invasive breast cancer and are scheduled to receive treatment at Uppsala University Hospital in Sweden. To take part, patients must give written informed consent. People who already have lymphoedema or have had certain previous cancer treatments are not eligible.

What does the study involve?
This is an observational study, which means participants won’t receive any experimental treatment. All participants will continue their planned breast cancer care. The study will follow about 350 women for three years after their breast cancer treatment to track who does or does not develop lymphoedema.

Participants will have several study visits over the three years (at diagnosis, and 3, 6, 12, 24, and 36 months later). At each visit, the team will measure arm swelling using a variety of routine medical methods, like bioimpedance (a method using small electrical signals) and infrared scanning for arm volume assessments. Blood samples will also be collected to look at genes and proteins (biomarkers) that might be linked to lymphoedema. Participants will also complete questionnaires about their quality of life and symptoms. If signs of swelling appear, an imaging technique using a special dye (indocyanine green) will be used to check the lymphatic system; this will also be used to assess variations in the lymphatic system before the start of breast cancer treatment.

What are the possible benefits and risks of participating?
Taking part may provide earlier detection and subsequent treatment for lymphoedema for about 1 in 5 study participants. The study could also help improve future care by identifying people at high risk of lymphoedema and improving prevention strategies. Some participants may feel discomfort from blood tests or find the study visits time-consuming. There are no experimental treatments involved.

Where is the study run from?
The Uppsala University Hospital in Uppsala, Sweden.

When is the study starting and how long is it expected to run for?
August 2024 to December 2030. Recruitment is expected to take around two years, and each participant will be followed for three years after their treatment. The entire study is therefore expected to run for approximately five years in total.

Who is funding the study?
Bröstcancerförbundet (Swedish Breast Cancer Association)

Who is the main contact?
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Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
AS2024-00843

Study information

Scientific Title

LymphSEARCH screening study - Incidence and prognostic factors for secondary lymphoedema in breast cancer patients

Acronym
LymphSEARCH screening

Study objectives
The purpose is to elucidate the multifactorial process of lymphoedema in breast cancer patients and examine which factors affect that process.

The primary aim is to determine the incidence of lymphoedema in patients treated for breast cancer.

Secondary aims are:
1. Examine risk factors and protective factors associated with the development of lymphoedema (e.g. type of surgery, genetic and biomarker variations, radiotherapy, chemotherapy treatment, axillary surgery, age, body mass index, anatomical variations of the lymphatic system)
2. Describe genetic variations of breast cancer patients who develop lymphoedema
3. Describe the timing of lymphoedema development in relation to breast cancer treatment

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 27/08/2024, Swedish Ethical Review Authority (Etikprövningsmyndiheten, Box 2110, Uppsala, 75002, Sweden; +46104750800; registrator@etikprovning.se), ref: 2024-03383-01

Study design
Single-centre, observation, prospective cohort study with 3 years of follow-up after breast cancer diagnosis

Primary study design
Observational

Study type(s)
Diagnostic, Prevention, Quality of life, Screening

Health condition(s) or problem(s) studied
Lymphoedema in breast cancer patients

Interventions
Observational: Patients are included after breast cancer diagnosis but before start of treatment. A baseline visit is performed with assessment of arm volume, bioimpedance, biomarkers, genetics, patient-reported outcome measures and mapping of lymphatic vessel anatomy in addition to clinical background data. Observation period is 2 years with subsequent visits for repeated measures at 3, 6, 12, 24, 36 months which is also end of follow-up.

Intervention Type
Mixed

Primary outcome(s)
Incidence of lymphoedema is determined through repeated measures of volume with infrared light measuring the outer limits of the upper extremity and percentage water content and tissue dielectric constant through bioimpedance spectroscopy at 3, 6, 12, 24, 36 months with pathological values indicating lymphoedema diagnosis validated by indocyanine green injection (ICG) and assessment of disrupted lymphatic flow through near-infrared light examination

Key secondary outcome(s))
1. Genetic variations assessed through genome genome-wide association study at the end of follow-up
2. Received treatment and risk correlation to lymphoemdea at the end of follow-up
3. Lymphatic anatomical variations assessed through ICG at baseline and 12 months
4. Quality of life assessed through questionnaires at baseline, 6, 12 and 36 months
5. Biomarker variations assessed through multiplex immunoassay at baseline, 6, 12, 24 and 36 months

Completion date
31/12/2030

Eligibility

Key inclusion criteria
1. Females age 18 years or older
2. Diagnosis of invasive breast cancer
3. Planned breast cancer treatment at Uppsala University Hospital
4. Informed written consent to participate in the study

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 years

Sex
Female

Key exclusion criteria
1. Guardians or subjects who, in the opinion of the Investigator, may be non-compliant with study schedules or procedures.
2. Previous diagnosis of lymphoedema in the upper extremity
3. Previous bilateral radiotherapy treatment for diagnosis other than breast cancer (ipsilateral radiotherapy is not an exclusion criterion, i.e. same side as current breast cancer diagnosis)

4. Previous chemotherapy for a malignant diagnosis other than breast cancer within 12 months prior to breast cancer diagnosis
5. Previous axillary surgery for diagnosis other than breast cancer

Date of first enrolment
16/05/2025

Date of final enrolment
31/12/2027

Locations

Countries of recruitment
Sweden

Study participating centre
Uppsala University Hospital
Akademiska sjukhuset
S-751 85 Uppsala
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Sponsor information

Organisation
Uppsala University Hospital

ROR
https://ror.org/01apvbh93

Funder(s)

Funder type
Research organisation

Funder Name
Bröstcancerförbundet (Swedish Breast Cancer Association)

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available due to data privacy regulations.

IPD sharing plan summary
Not expected to be made available