

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

02 Jul 2026

### Investigating the Effects of Peripheral Blood Stem Cells Injection in Treatment of Primary Lower Extremity Lymphedema

#### Protocol summary

##### Study aim

The aim of this pilot before and after single arm clinical trial is the cure of lymphedema via induction of lymphangiogenesis by autologous peripheral blood stem cells injection to the unilateral lymphedematous lower extremity. To reach this goal, improvements will be tracked histopathologically (average number of lymphatic vessels via biopsy), by imaging (lymphoscintigraphy), clinically (stage of lymphedema and measurement of circumference and volume of the limb) and via patients' sense of wellness (quality of life). The other goals are assessment the relation between these variables and the age, duration and severity of disease.

##### Design

A pilot before and after single arm clinical trial with a single group of 10 patients

##### Settings and conduct

This study will be totally taking place in Shariati Hospital of the Tehran University of Medical Science, Tehran, Iran. The recruitment and follow up center is the hospital's vascular surgery clinic, the cell preparations will be proceeded in the hospital's Hematology, Oncology and Stem Cell Transplantation Research Center and the stem cells will be injected in the hospital's operation room. The experts of the hospital's pathology lab and nuclear medicine imaging center will do the histopathologic investigation and lymphoscintigraphy. The main investigators may be keep blinded from the primary histopathologic and lymphoscintigraphic data (except the presence of lymphedema).

##### Participants/Inclusion and exclusion criteria

Patients with lower extremity/ies primary lymphedema will be recruited and among them, patients with history of malignancy or radio/chemotherapy or organ transplantation in the last 10 years and coronary artery disease, severe heart failure (EF<30%), chronic renal disease, diabetes and uncontrolled hypertension and active infection in the lower extremity will be excluded.

##### Intervention groups

The intervention is including 3-5 days of subcutaneously injection of GCSF for stem cell recruitment from bone marrow into the peripheral blood and then drawing blood from peripheral vessels to separate the peripheral blood stem cells. After cell preparations, half of the cells will be injected subcutaneously into the unilateral lymphedematous lower limb in about 80 points and the other half of the cells will be frozen for the similar injection 3 weeks later. Also, a punch biology for histopathologic investigation and lymphoscintigraphy will be obtained before the intervention and at the end of the 9 months of follow up. Patients will fill the Quality of Life questionnaire before the intervention and after the 9 months of follow up. The essential variable is the circumference and volume of the limb which will be measured monthly for 9 months.

##### Main outcome variables

Circumference and volume of the lower extremity, lymphoscintigraphic transport index, average number of subcutaneous lymphatic vessels and quality of life

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20171023036966N1**

Registration date: **2018-01-22, 1396/11/02**

Registration timing: **registered\_while\_recruiting**

Last update: **2018-01-22, 1396/11/02**

Update count: **0**

##### Registration date

2018-01-22, 1396/11/02

##### Registrant information

##### Name

Vida Ehyae Ghodraty

##### Name of organization / entity

Tehran University of Medical Science

**Country**

Iran (Islamic Republic of)

**Phone**

+98 21 6443 2592

**Email address**

v-ehyaeeh@student.tums.ac.ir

**Recruitment status**

**Recruitment complete**

**Funding source**

**Expected recruitment start date**

2018-01-19, 1396/10/29

**Expected recruitment end date**

2019-01-19, 1397/10/29

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**

empty

**Scientific title**

Investigating the Effects of Peripheral Blood Stem Cells Injection in Treatment of Primary Lower Extremity Lymphedema

**Public title**

Using the Stem Cells to Cure Lower Limb Lymphedema

**Purpose**

Treatment

**Inclusion/Exclusion criteria**

**Inclusion criteria:**

primary lower extremities lymphedema (stage < III)

**Exclusion criteria:**

Uncontrolled hypertension Diabetes Sever heart failure (EF<30 %) Coronary arterial disease Chronic renal disease History of any malignancies over the last 10 years History of chemo/radiotherapy in the last 10 years Organ transplantations in the last 10 years Active infection of the lower extremities

**Age**

No age limit

**Gender**

Both

**Phase**

N/A

**Groups that have been masked**

No information

**Sample size**

Target sample size: 10

**Randomization (investigator's opinion)**

N/A

**Randomization description**

**Blinding (investigator's opinion)**

Not blinded

**Blinding description**

**Placebo**

Not used

**Assignment**

Single

**Other design features**

**Secondary Ids**

empty

**Ethics committees**

**1**

**Ethics committee**

**Name of ethics committee**

Research Ethics committee of Tehran University of Medical Science

**Street address**

Office #605, 6th floor, core building of Tehran University of Medical Science, cross section of Ghods street and Keshavarz blv.

**City**

Tehran

**Province**

Tehran

**Postal code**

1417613151

**Approval date**

2017-07-25, 1396/05/03

**Ethics committee reference number**

IR.TUMS.MEDICINE.REC.1396.2984

**Health conditions studied**

**1**

**Description of health condition studied**

Lymphedema is the accumulation of lymphatic fluid in the extravascular space resulted from dysfunction of lymphatic drainage because of mostly structural damage in lymphatic vessels. Various etiology of lymphedema is consist of primary and genetic malfunctions presenting the disease congenitally, over the first year after birth, up to 35 years or after this age and cancers and their treatment methods, traumas and other causes for example filariasis can cause the secondary lymphedema which is more common. Once lymphedema occurs it may be progressive with different rates and transform the involving limb and this causes pain, movement limitations and makes the limb prone to infections. There are various methods of management but not curative like compression therapies and surgical methods.

**ICD-10 code**

I89.0

**ICD-10 code description**

Lymphedema, not elsewhere classified

**2**

**Description of health condition studied**

Hereditary lymphedema is the primary lymphedema in which genetically malfunctional lymphatic vessels rather than obstructions or destructions via cancer, trauma and etc. lead to lymphatic drainage dysfunction and lymphedema.

## ICD-10 code

Q82.0

## ICD-10 code description

Hereditary lymphedema

## Primary outcomes

### 1

#### Description

Circumference of the lymphedematous lower extremity in specific distances of the limb length

#### Timepoint

Before intervention and then monthly up to 9 months

#### Method of measurement

Tape measuring

### 2

#### Description

Volume of the Circumference of the lymphedematous lower extremity

#### Timepoint

Before intervention and then monthly up to 9 months

#### Method of measurement

Volume of truncated cone formula

## Secondary outcomes

### 1

#### Description

Quality of life

#### Timepoint

Before intervention and end of the follow up time (9 months after intervention)

#### Method of measurement

WHO QOL questionnaire (SF 26)

### 2

#### Description

Lymphoscintigraphic Transport Index (TI)

#### Timepoint

Before intervention and end of the follow up time (9 months after intervention)

#### Method of measurement

Report of lymphoscintigraphy by the expert nuclear medicine specialist

### 3

#### Description

Average number of subcutaneous lymphatic vessels of the lower extremities

#### Timepoint

Before intervention and end of the follow up time (9 months after intervention)

#### Method of measurement

Histopathologic investigation and immunohistochemistry (IHC) staining by the expert pathologist

## Intervention groups

### 1

#### Description

Intervention group: a single group of 10 patients with primary lower extremity(ies) lymphedema, with no exclusion criteria, will receive 10mcg/kg/day of G-CSF for 3-5 days to recruit more stem cells from bone marrow to peripheral blood. Stem cells will be separated from 200-300 cc of peripheral blood drawn from the cubital vein. Half of the cells will be injected subcutaneously to 80-100 points of unilateral limb and the other half will be frozen for a second injection, 3 weeks later. The circumference and volume of the limb (monthly), the average number of lymphatic vessels (via biopsy), severity of lymphedema (lymphoscintigraphy and transport index), and the quality of life (questionnaire) will be compared before and after the 9 months past the intervention.

#### Category

Treatment - Other

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Clinic of Vascular Surgery in Shariati Hospital

##### Full name of responsible person

Behnam Molavi

##### Street address

North Kargar street, Shariati Hospital

##### City

Tehran

##### Province

Tehran

##### Postal code

1411713135

##### Phone

+98 21 8490 2227

##### Fax

+98 21 8863 3039

##### Email

molavibe@sina.tums.ac.ir

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

Hematology, Oncology and Stem Cell Transplantation Research Center

##### Full name of responsible person

Saeed Mohammadi

##### Street address

North Kargar street, Shariati Hospital

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saeed\_58@yahoo.com

**Web page address**

http://horcsct.tums.ac.ir/

**Grant name**

**Grant code / Reference number**

**Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Hematology, Oncology and Stem Cell Transplantation  
Research Center

**Proportion provided by this source**

100

**Public or private sector**

Public

**Domestic or foreign origin**

Domestic

**Category of foreign source of funding**

empty

**Country of origin**

**Type of organization providing the funding**

Academic

## Person responsible for general inquiries

**Contact**

**Name of organization / entity**

Department of Vascular Surgery, Shariati Hospital

**Full name of responsible person**

Behnam Molavi

**Position**

Assistant Professor

**Latest degree**

Subspecialist

**Other areas of specialty/work**

Vascular and Endovascular surgery

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North kargar street, Shariati Hospital

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## Person responsible for scientific

## inquiries

**Contact**

**Name of organization / entity**

Department of Vascular Surgery, Shariati Hospital

**Full name of responsible person**

Behnam Molavi

**Position**

Assistant Professor

**Latest degree**

Subspecialist

**Other areas of specialty/work**

Vascular and Endovascular Surgery

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## Person responsible for updating data

**Contact**

**Name of organization / entity**

Shariati Hospital

**Full name of responsible person**

Vida Ehyae Ghodraty

**Position**

Physician in practice

**Latest degree**

Medical doctor

**Other areas of specialty/work**

General Practitioner

**Street address**

North Kargar street, Shariati Hospital

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vdehyaee@yahoo.com

## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be a plan to make this available

**Study Protocol**

Yes - There is a plan to make this available

**Statistical Analysis Plan**

Yes - There is a plan to make this available

**Informed Consent Form**

Yes - There is a plan to make this available

**Clinical Study Report**

Yes - There is a plan to make this available

**Analytic Code**

Undecided - It is not yet known if there will be a plan to make this available

**Data Dictionary**

Undecided - It is not yet known if there will be a plan to make this available

**Title and more details about the data/document**

All the deidentified measurements from the participants including medical history and data of size of the limb, lymphoscintigraphic and histopathologic procedures and data before and after the intervention and also the detailed cellular preparations procedures will be available for other researchers.

**When the data will become available and for how long**

It can become available just after finding a dramatic result or at the end of the study for an unlimited time.

**To whom data/document is available**

All the information will be available for research ethic committees, detailed procedures and statistics can be available for researchers and the results and summary of procedures can be useful for industries and lymphedematous patients.

**Under which criteria data/document could be used**

Not specific criteria.

**From where data/document is obtainable**

During the study, please contact the project e-mail: [lymphedema.research.tums@gmail.com](mailto:lymphedema.research.tums@gmail.com) After publishing the article there will be a guide for obtaining it.

**What processes are involved for a request to access data/document**

Contact with project email and send your request. [lymphedema.research.tums@gmail.com](mailto:lymphedema.research.tums@gmail.com)

**Comments**

[lymphedema.research.tums@gmail.com](mailto:lymphedema.research.tums@gmail.com)