

Clinical Trial Protocol

Iranian Registry of Clinical Trials

09 Jun 2026

Phase I/II Clinical Trial using ex-vivo Expanded Haploidentical Donor-derived NK Cells against metastatic and refractory Breast cancer patients

Protocol summary

Study aim

Evaluation of the safety and feasibility of ex vivo expanded NK cells infusion in metastatic breast cancer patients

Design

The current study is a phase I/II nonrandomized-nonblinded clinical trial involving 30 patients with metastatic breast cancer who had received a conditioning regimen consisted of two doses of intravenous natural killer cells.

Settings and conduct

This cancer immunotherapy study is conducted in the bone marrow transplantation unit of participating hospitals (Day, Imam Reza, etc.). Patients who meet inclusion criteria receive a conditioning regimen including cyclophosphamide 20mg/kg and fludarabine 20mg/kg for 2-3 days. One day 2, 1-5 million/kg of NK cells cultured in vitro are injected intravenously in one hour. The second injection consists of 5-10 million cells/kg on day 7.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: 1. Age 18-65 years 2. Pathological diagnosis of breast cancer 3. The metastatic disease that can be evaluated according to RECIST Criteria (1.1) 4. Lack of response to the first and second lines of metastatic treatment 5. EF \geq 50% 6. Performance Status = 0-1 7. In routine experiments, the following criteria would be checked: ANC \geq 1500, PH \geq 100,000, GFR \geq 60, T.Bil \leq 1.5xULN, AST, ALT \leq 2xULN 8. BHCG levels should be negative in the last two weeks before treatment. 9. Ability to fill the consent form and agree with its provisions Exclusion Criteria 1. Take any anti-cancer medication at the same time 2. Major surgery one month before entering the study 3. Active infection that impairs the patient's tolerance for treatment 4. Breastfeeding or pregnancy

Intervention groups

Patients with metastatic breast cancer will receive conditioning regimen then receive intravenously

1-10x10⁶ NK cells/Kg in two times.

Main outcome variables

The hypersensitivity and allergy; tumor size changes and secondary metastases; evaluation of recurrence rate

General information

Reason for update

Acronym

NKCTB

IRCT registration information

IRCT registration number: **IRCT20200621047859N1**

Registration date: **2020-12-28, 1399/10/08**

Registration timing: **registered_while_recruiting**

Last update: **2020-12-28, 1399/10/08**

Update count: **0**

Registration date

2020-12-28, 1399/10/08

Registrant information

Name

Ramin Sarrami Forooshani

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 21 8879 6003

Email address

rsf1351@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-08-22, 1399/06/01

Expected recruitment end date

2022-12-23, 1401/10/02

Actual recruitment start date

empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Phase I/II Clinical Trial using ex-vivo Expanded Haploidentical Donor-derived NK Cells against metastatic and refractory Breast cancer patients

Public title
Metastatic breast cancer immune cell therapy using allogeneic ex-vivo expanded Natural Killer Cell (NK cell) transplantation

Purpose
Treatment

Inclusion/Exclusion criteria
Inclusion criteria:
Breast cancer diagnosed with pathological report
Approved according to Recist form for metastatic breast cancer [EF≥50%]EJECTION FRACTION
ElectroCochleoGraphy (ECoG) =0-1 ANC≥1500, PH≥100,000, GFR≥60, T.Bil≤1.5xULN, AST, ALT≤2xULN
bHCG=negative Ability to fill out a consent form and agree to its terms PS=0-1
Exclusion criteria:
Receiving any anticancer drug at the same time Major surgery one month before enrollment An active infection that impairs a patient's tolerance for treatment
Breastfeeding or pregnancy

Age
From **18 years** old to **65 years** old

Gender
Female

Phase
1-2

Groups that have been masked
No information

Sample size
Target sample size: **30**

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 Motamed Cancer Institute, Academic Center for Education Culture and Res

Street address

No 146, South Qandi Avenue, Vanaq Square, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1517964311

Approval date

2019-10-16, 1398/07/24

Ethics committee reference number

IR.ACECR.IBCRC.REC.1398.013

Health conditions studied

1

Description of health condition studied

Breast Cancer

ICD-10 code

C50

ICD-10 code description

Malignant neoplasm of breast

Primary outcomes

1

Description

Symptoms of Hypersensitivity

Timepoint

Every day after infusion until to 1 week and weekly until to 3 months

Method of measurement

Physical examination and MRI-CT

2

Description

Tumor size

Timepoint

Every months until to 3 months

Method of measurement

Physical examination- Lab diagnostic tests- MRI-ST scan

3

Description

Symptoms of GVHD

Timepoint

Every day after infusion until to 1 week and weekly until to 3 months

Method of measurement

Physical examination- Lab diagnostic tests- MRI-ST scan

4

Description

Metastasis

Timepoint

Monthly until to 3 months

Method of measurement

Physical examination- Lab diagnostic tests- MRI-ST scan

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Metastatic Breast cancer patients with no response to treatment who received a conditioning regimen and two dosages of immune cell infusion a week apart (1-10x10⁶ cells/Kg). Natural killer cells are produced from blood donors in vitro under GMP conditions.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Imam Reza Hospital

Full name of responsible person

Dr Mohsen Rajaei Nejjhad

Street address

West Fatemi avenue- Etemadzade street, Tehran, Iran

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Tehran

Province

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Postal code

14117 1854

Phone

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mrjaei@gmail.com

2

Recruitment center

Name of recruitment center

Shariati hospital

Full name of responsible person

Dr Maryam Barkhordari

Street address

North Kargar St, Jalal Al-Ahmad Intersection, Shariati Hospital, Tehran, Iran

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1411713135

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barkhordarm.n@gmail.com

3

Recruitment center

Name of recruitment center

Day Hospital

Full name of responsible person

Dr Ardeshir Ghavamzadeh

Street address

Valiasr St, corner of Shahid Abbaspour, Tehran, Iran

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z.hashemi87@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Motamed Cancer Institute

Full name of responsible person

Dr Keivan Majidzadeh Ardebili

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No. 146, South Qandi Avenue, Vanaq Square, Tehran, Iran

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K1majidzadeh@gmail.com

Grant name

Grant code / Reference number

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

No

Title of funding source

Cell therapy budget of the Islamic Consultative Assembly

Proportion provided by this source

10

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**

Other

2**Sponsor****Name of organization / entity**

Modiriat Atiyeh Bahman Company

Full name of responsible person

Sina Hasnalizadeh

Street address

No.1, Tabatabaei alley, Ghasemi avenue, Tehran, Iran

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1459973114

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Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Modiriat Atiyeh Bahman Company

Proportion provided by this source

90

Public or private sector

Private

Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin**Type of organization providing the funding**

Other

Person responsible for general inquiries**Contact****Name of organization / entity**

Iranian academic center for education culture and research

Full name of responsible person

Dr Ramin Sarrami Forooshani

Position

Associated professor

Latest degree

Ph.D.

Other areas of specialty/work

Virology

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Person responsible for scientific inquiries**Contact****Name of organization / entity**

Iranian academic center for education culture and research

Full name of responsible person

Dr Ardeshir Ghavamzadeh

Position

Professor

Latest degree

Subspecialist

Other areas of specialty/work

Medical Oncology

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Person responsible for updating data**Contact****Name of organization / entity**

Iranian academic center for education culture and research

Full name of responsible person

Dr Zahrasadat Hashemi

Position

Professor assistant

Latest degree

Ph.D.

Other areas of specialty/work

Medical Biotechnology

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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

No - There is not a plan to make this available

Statistical Analysis Plan

Not applicable

Informed Consent Form

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

Clinical Study Report

Undecided - It is not yet known if there will be 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

Not applicable