Clinical Trial Protocol
Iranian Registry of Clinical Trials

18 Sep 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≥50% 6. Performance Status = 0-1 7. In routine experiments, the following criteria would be checked: ANC≥1500, PH≥100,000, GFR≥60, T.Bil≤1.5xULN, AST, ALT≤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 1-10x10^6 NK cells/Kg in two times.

Main outcome variables
The hypersensivity 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
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Iran (Islamic Republic of)
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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 (1-10x10^6 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 Nejhad
Street address
West Fatemi avenue- Etemadzade street, Tehran, Iran
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14117 1854
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mrajaei@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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3

Recruitment center
Name of recruitment center
Day Hospital
Full name of responsible person
Dr Ardeshir Ghavamzadeh
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Valiasr St, corner of Shahid Abbaspour, Tehran, Iran
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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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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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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
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Person responsible for updating data

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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