# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

17 Sep 2026

## Evaluation of efficacy and safety of allogeneic activated Natural Killer cells in adult patients with relapsed/refractory acute myeloid leukemia.

## Protocol summary

**Study aim**

1. Safety evaluation (tolerability of adverse effects) of intravenous injection of allogeneic natural killer cells to adult patients with relapsed/refractory acute myeloid leukemia 2. Evaluating the effectiveness of treatment (induction of GVL effect) of allogeneic natural killer cells in adult patients with relapsed/refractory acute myeloid leukemia.

**Design**

Phase 2 clinical trial without control group on 5 patients

**Settings and conduct**

The preparation and injection of the first round of NK is done as soon as entering the study. Injections are done in three times, once a week. Before receiving NK cells, fludarabine and cyclophosphamide are prescribed. NK suspended in 50 ml of 5% albumin solution is injected intravenously (central vein) for 15-20 minutes. In each NK injection, the number of injected live cells is determined based on the patient's weight. The injected NK cell is considered to be at least 106 cells per kilogram of body weight.

**Participants/Inclusion and exclusion criteria**

Inclusion criteria: 1- Patients with AML of both genders in the age range of 18 to 65 years 2- Patients with known involvement of CNS with AML provided that they have been treated and CSF is clear for at least 2 weeks before enrollment in the study. 3- ECOG functional status less than or equal to 2. 4- Adequate functioning of organs 5- Be able to stop using corticosteroids and other immunosuppressive drugs from the 3rd day of the trial and up to 30 days after the injection of NK cells. 6- Absence of pregnancy or breastfeeding 7- Failure to receive any research drug within 14 days before the start of the clinical trial 8- The ability to understand and the willingness to sign a certified informed consent document (or if there is an authorized legal representative)

**Intervention groups**

Transfusion of allogenic natural killer cells

**Main outcome variables**

NK cell; GvHD grade III; ST2; REG3α; S100; TIM3; HGF

## General information

**Reason for update**

**Acronym**

**IRCT registration information**

IRCT registration number: **IRCT20200417047113N2**
Registration date: **2023-01-25, 1401/11/05**
Registration timing: **registered_while_recruiting**

Last update: **2023-01-25, 1401/11/05**
Update count: **0**

**Registration date**

2023-01-25, 1401/11/05

**Registrant information**


**Name**
Sahar Shojaei
**Name of organization / entity**
Middle East Gene Therapy project
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**Recruitment status**

**Recruitment complete**

**Funding source**

**Expected recruitment start date**

2022-12-22, 1401/10/01

**Expected recruitment end date**

2024-12-21, 1403/10/01

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**

empty

**Scientific title**

Evaluation of efficacy and safety of allogeneic activated Natural Killer cells in adult patients with relapsed/refractory acute myeloid leukemia.

**Public title**

Effect of treatmen with natural killer cells in acute myeloid leukemia

**Purpose**

Treatment

**Inclusion/Exclusion criteria**

**Inclusion criteria:**

Patients with AML of both genders in the age range of 18 to 65 years with the following conditions:• Refractory AML that has not fully recovered after induction therapy.• Relapsed AML that is not a candidate for bone marrow allogeneic transplantation.• High-risk AML (based on ELN criteria) in complete remission (CR) but currently not a candidate for allogeneic bone marrow transplantation.• Relapsed AML after bone marrow transplantation Patients with known CNS involvement with AML provided that they had been treated and the CSF was clear for at least 2 weeks prior to study enrollment ECOG performance status less than or equal to 2 Adequate performance of organs as follows:• Total bilirubin ≤ 2 mg/dL• AST(SGOT)/ALT(SGPT) ≤ 3.0 x IULN• Creatinine within normal institutional limits OR creatinine clearance ≥ 50 mL/min/1.73 m2 by Cockcroft-Gault Formula (adults) or Schwartz formula (pediatric cohort)• Oxygen saturation ≥90% on room air• Ejection fraction ≥50% Be able to stop using corticosteroids and other immunosuppressive drugs from day 3- the beginning of the trial and up to 30 days after the injection of NK cells. However, if clinically necessary, the use of low-level corticosteroids is allowed. Low-level corticosteroid use was defined as 10 mg or less of prednisone (or equivalent for other steroids) per day Not pregnant or breastfeeding Failure to receive any research drug within 14 days before the start of the clinical trial Ability to understand and willingness to sign a certified informed consent document (or if there is an authorized legal representative)

**Exclusion criteria:**

Uncontrolled bacterial or viral infections, or known HIV, hepatitis B or C infection Uncontrolled angina, severe uncontrolled ventricular arrhythmias, or EKG indicating acute ischemia or active conduction system abnormalities New progressive pulmonary infiltrates on screening chest x-ray or chest CT scan that were not evaluated by bronchoscopy. Infiltrations attributed to infection should be stable and improving after 1 week of appropriate therapy (4 weeks for suspected or proven fungal infections) Known sensitivity to one or more study agents Active autoimmune disease that requires systemic immunosuppression treatment Known history of other cancers in the last 5 years

**Age**

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

**Gender**

Both

**Phase**

2

**Groups that have been masked**

*No information*

**Sample size**

Target sample size: **5**

**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**

Vice President of Research and Technology Shahid Beheshti University of Medical Sciences (Research E

**Street address**

Shahid Beheshti Medical university, Yaman St, Shahid Chamran Highway

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**Postal code**

1985717443

**Approval date**

2021-11-28, 1400/09/07

**Ethics committee reference number**

IR.SBMU.RETECH.REC.1400.671

## Health conditions studied

### 1

**Description of health condition studied**

Acute Myeloid leukemia

**ICD-10 code**

C92.0

**ICD-10 code description**

Acute myeloblastic leukemia

## Primary outcomes

### 1

**Description**

percentage of peripheral blood blast

**Timepoint**

Before treatment and then 4,8 and 12 weeks after treatment

**Method of measurement**

Peripheral blood Flowcytometry

**2**

**Description**

Hematologic parameters

**Timepoint**

before starting the treatment and then weekly until 6 weeks and then monthly

**Method of measurement**

CBC

## Secondary outcomes

empty

## Intervention groups

**1**

**Description**

Intervention group: The preparation and injection of the first round of natural killer cells (NK) is done as soon as entering the study. Injections are done in three times, once a week. Before receiving NK cells, fludarabine and cyclophosphamide drugs are prescribed. NK suspended in 63 ml of 6% albumin solution is injected intravenously (central vein) for 16-23 minutes. In each NK injection, the number of injected live cells is determined based on the patient's weight. The injected NK cell is considered to be at least 10 to the power of 6 cells per kilogram of body weight. The number of injected cells is calculated based on the number of living cells.

**Category**

Treatment - Other

## Recruitment centers

**1**

**Recruitment center**

**Name of recruitment center**

Taleghani hospital

**Full name of responsible person**

Sina Salari

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**2**

**Recruitment center**

**Name of recruitment center**

Namazi Hospital

**Full name of responsible person**

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**3**

**Recruitment center**

**Name of recruitment center**

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## Sponsors / Funding sources

**1**

**Sponsor**

**Name of organization / entity**

Middle East Gene Therapy corporation

**Full name of responsible person**

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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**
Middle East Gene Therapy corporation
**Proportion provided by this source**
100
**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**
Shahid Beheshti University of Medical Sciences
**Full name of responsible person**
Aida Iranpour
**Position**
Adult Hematology and Oncology specialist assistant
**Latest degree**
Subspecialist
**Other areas of specialty/work**
Internal Medicine
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## Person responsible for scientific inquiries

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## Person responsible for updating data

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## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**
Yes - There is 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**
After de-identifying individuals, a portion of the data that contain information related to the main outcome could be shared
**When the data will become available and for how long**

Access starts 6 months after the results are published

**To whom data/document is available**

People related to academic and scientific centers

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

In order to write articles or design similar studies

**From where data/document is obtainable**

By email with the person responsible for the scientific response of the study

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

An answer will be given by e-mail within a period of one month after the review of the request

**Comments**