

**A Single-Center Clinical Study to Evaluate the
Efficacy and Safety of Allogeneic Natural Killer (NK)
Cell Therapy for Corneal Ulcers with Stromal
Infiltration**

NCT Number Not applicable

Document Date May 2026

Version V1.0

Informed Consent Form for Cell Transplantation Subjects

Study Title: A Single-Center Clinical Study to Evaluate the Efficacy and Safety of Allogeneic Natural Killer (NK) Cell Therapy for Corneal Ulcers with Stromal Infiltration

Clinical Protocol Number:

Study Institution: Eye Hospital of Shandong First Medical University
(Shandong Eye Hospital)

Principal Investigator: Shi Weiyun

Subject Initials:_____ **Subject Screening Number:** _____

Dear Subject,

We sincerely invite you to participate in a clinical study. This study titled " A Single-Center Clinical Study to Evaluate the Efficacy and Safety of Allogeneic Natural Killer (NK) Cell Therapy for Corneal Ulcers with Stromal Infiltration", is sponsored and initiated by Shi Weiyun. The study will be conducted at Eye Hospital of Shandong First Medical University, and the study protocol has been approved by the institutional

ethics committee of this center.

To assist you make an informed decision, this informed consent form aims to provide you with detailed information about the study, including the purpose, process, potential benefits, and risks of the treatment. This document explains how your medical information will be used and who may have access to it. You will receive a copy of this informed consent form for your reference or to seek advice from others.

The study doctor or research staff will answer all your questions regarding this informed consent form or the clinical study. Please read this document carefully and inquire about any information within it. This document may contain professional terms that you are not familiar with; please ask the study doctor or staff to explain any unfamiliar terms or information. After a thorough understanding, please confirm whether you voluntarily agree to participate in this study. We can only proceed with the treatment if you fully understand the treatment process and risks. Your signature indicates that you voluntarily agree to participate in this study and have a full understanding of all contents. Please sign two copies of the informed consent form. You will receive a signed and dated copy for your records.

Study Background

Necrotizing corneal ulcer, also known as Mooren's ulcer, is an

idiopathic, progressive, and painful corneal ulcer that, mechanistically, is classified as an autoimmune disease; however, its exact pathogenic mechanism remains incompletely understood. Currently, the primary treatments for necrotizing corneal ulcer include both pharmacological and surgical approaches. Nevertheless, necrotizing ulcers tend to recur frequently, and there is currently no curative treatment available. Natural killer (NK) cells are key components of the innate immune system. Building on the protective role of NK cells in autoimmune diseases such as systemic lupus erythematosus, this study aims to investigate the efficacy and safety of allogeneic NK cell transplantation as a therapeutic approach for necrotizing corneal ulcer, thereby providing a novel treatment option for refractory cases of this condition.

Study Objectives

This clinical study primarily targets patients with refractory erosive corneal ulcers who have failed conventional treatments (with continued corneal thinning) or whose condition has relapsed. The primary objective is to evaluate the safety of allogeneic NK cell transplantation, while the secondary objective is to assess the efficacy of this transplant therapy, thereby exploring the feasibility of allogeneic NK cell transplantation for the treatment of refractory erosive corneal ulcers.

Study Methods and Procedures

If you agree to participate in this study, we will perform cell

transplantation using allogeneic natural killer (NK) cells at the fornix conjunctiva site of the subject.

This clinical study consists of a screening period, a transplantation period, and an observation period. The expected duration of participation for each subject ranges from the date of signing the informed consent form (one week before allogeneic NK cell transplantation) to the end of the observation period (48 weeks after NK cell transplantation).

Informed Consent Form Signing

If you have fully understood the content of this informed consent form and voluntarily agree to participate in this study, you can sign the informed consent form. After you have signed the informed consent form, you will enter the screening phase.

Inclusion and Exclusion Criteria

Inclusion Criteria

Subjects must meet all of the following inclusion criteria to participate in the study:

- (1) Clinically confirmed as a corneal ulcer with undermining characteristics, meeting the clinical diagnostic criteria for undermining corneal ulcers (infiltration and ulceration appearing at the peripheral cornea, or showing progressive development accompanied by ciliary injection; other corneal lesions have been ruled out).
- (2) The ulcerative lesion covers an area no greater than half the

circumference of the cornea, with stromal infiltration depth not exceeding 1/3 to 2/3 of the corneal thickness; no severe complications such as corneal perforation or endophthalmitis have occurred.

(3) There are obvious symptoms such as eye pain, photophobia, tearing, and a foreign-body sensation, and conventional conservative medical treatments have shown poor efficacy.

(4) The intraocular pressure of the affected eye is within the normal range (10–21 mmHg), and there are no associated ocular conditions such as severe blepharitis or dacryocystitis. The contralateral eye has no history of corneal ulceration due to keratitis or active lesions.

(5) Patients aged 18 or older and under 85 who consent to the acquisition (gender unrestricted).

(6) Patients who can provide written consent to voluntarily participate in the study from themselves

Exclusion Criteria

Subjects meeting any of the following exclusion criteria shall not be allowed to participate in the study:

(1) Those who do not meet any of the above selection criteria.

(2) Exclusion criteria related to corneal lesions: The corneal ulcer has already developed severe complications such as perforation, endophthalmitis, or corneal hydrops; the ulcer area exceeds half of the corneal circumference, or the depth of corneal stromal infiltration exceeds

two-thirds of the corneal thickness; or the patient has concurrent other corneal diseases (such as infectious keratitis, keratoconus, corneal dystrophy, etc.).

(3) Exclusion of systemic diseases: Individuals with severe cardiovascular and cerebrovascular diseases, hepatic or renal dysfunction (hepatic function—ALT/AST exceeding 1.5 times the upper limit of normal; renal function—creatinine exceeding 1.2 times the upper limit of normal), hematopoietic dysfunction, or uncontrolled autoimmune diseases (such as rheumatoid arthritis, systemic lupus erythematosus, etc.); individuals with active infections, malignant tumors, or a history of surgery within the past 3 months; and diabetic patients with poor glycemic control (HbA1C above 8.5%).

(4) Exclusion of special populations: pregnant women and breastfeeding women; individuals (both men and women) who have plans to conceive and are not using effective contraception; individuals with alcohol dependence or substance abuse.

(5) Other exclusions: Subjects unable to comply with clinical trial follow-up and examinations; subjects with other factors that may affect the assessment of trial results (such as a history of ocular trauma, congenital ocular malformations, etc.); subjects deemed by the investigator as unsuitable for inclusion in the trial.

(6) Patients who have participated in other clinical trials or clinical

studies within the 3 months prior to consent to enrollment.

(7) Other patients who are deemed unsuitable for this clinical study due to comorbidities or other factors.

Potential Benefits of Participating in the Study

The anticipated goal of this treatment is to use cell transplantation to address erosive corneal ulcers and reduce their recurrence rate. During your participation in this study, your symptoms and signs such as corneal edema, blurred vision, and eye pain may improve; however, due to individual differences in therapeutic effects, we cannot guarantee or promise definite benefits. If this study treatment is effective, the results may help other patients with similar diseases in the future. We sincerely thank you for your contribution to the innovation of treatment methods.

Potential Risks of Participating in the Study

All clinical studies, study drugs, and study processes may involve unknown risks. If you experience any discomfort after cell transplantation, please promptly inform your study doctor, who will monitor the occurrence of adverse reactions throughout the process.

1. Cell transplantation failure: The therapeutic effect does not meet expectations, which may lead to disease progression.

2. Infection: Local or systemic infection may occur during surgery or injection.

3. Ocular complications: Acute glaucoma, intraocular hemorrhage,

increased intraocular pressure, infection and viral reactivation, progression of cataracts, graft-versus-host disease, and others.

4. Other side effects: Such as ocular pain, blurred vision, elevated intraocular pressure, etc.

5. If you experience any discomfort during the treatment, please immediately inform the medical staff.

Storage and Disposal of Cell Materials

You have the right to choose not to preserve the remaining cells after cell transplantation. We will dispose of them harmlessly in accordance with biological waste disposal regulations.

Right to Choose and Voluntary Principle

You have the right to decide whether or not to undergo NK cell transplantation under the conjunctiva of the eyeball. At any stage during the treatment, you can stop or discontinue the treatment at any time without affecting your future medical options.

Right Protection

You have the right to ask the doctor any questions before treatment and understand the detailed treatment process.

You have the right to know how your personal medical information will be used, and we will strictly keep all your personal and medical data confidential.

If you have any questions or discomfort, you can communicate with

the medical team at any time and terminate the treatment at any time.

Privacy Protection Clause

Your personal information and medical data will be strictly confidential and used only for this treatment and related research. If your data needs to be used for academic research or publication, you will be notified in advance and your consent will be obtained.

Study Costs and Compensation

We will provide you with NK cells free of charge. As a subject, if you suffer injury due to receiving the study drug treatment or following the study procedures correctly and in accordance with the researcher's guidance, the sponsor will compensate you for reasonable medical expenses incurred for the treatment of study-related injuries and reasonable compensation required by relevant Chinese laws and regulations.

Withdrawal from the Study

Your participation in this study is entirely voluntary. You may refuse to participate or request to withdraw from the study at any stage. Your decision will not result in any fines or loss of benefits. Your decision to participate in this study will not affect your future medical treatment at this study center.

The study doctor and/or sponsor may request you to withdraw from the study if:

1. You fail to complete the scheduled study visits;
2. You fail to follow the instructions and explanations of the study doctor;
3. Discontinuing participation in the study is more beneficial to your health and safety.

The study doctor and/or sponsor may request you to continue completing the study visits if:

1. Study-related injury occurred without sequelae after appropriate management;
2. An adverse event has occurred but no consequences have been caused after appropriate treatment.

The sponsor has the right to terminate the study project at any time without giving any reason. If you wish to withdraw from the study before completing all visits, please notify the study doctor or study staff via [contact phone number].

Confidentiality System

Your medical information obtained through participating in this study will be kept confidential. To protect your privacy, you will be identified by a unique number, and your medical records will be linked to your subject number and completely stored at the study institution. The doctor will record the examination results in your medical record. Researchers, monitors, auditors, the ethics committee, and drug

regulatory authorities will be allowed to access your medical records; no other unauthorized person may obtain this information. Any public report on the results of this study will not disclose your personal information, and we will make every effort to protect the privacy of your medical data.

Thank you for reading the above information. The decision to participate in this study is entirely yours, and you may consult with your family. If you have any questions or concerns related to this study, you can contact Dr. [name] via [contact phone number] for inquiries.

Informed Consent Form Signature Page

I have read the above introduction to the " A Single-Center Clinical Study to Evaluate the Efficacy and Safety of Allogeneic Natural Killer (NK) Cell Therapy for Corneal Ulcers with Stromal Infiltration". The study doctor has explained the potential risks and benefits of this study in detail to me and answered all relevant questions. In addition, the purpose, methods, procedures, and duration of the study have been explained to me in detail. After fully understanding all the contents of the informed consent form and the potential advantages and disadvantages of participating in this study, I voluntarily agree to participate in this trial. I am willing to cooperate with my study doctor and carefully complete this trial. I understand that:

1. I have consulted the study doctor about my concerns and voluntarily participate in this trial with full knowledge;

2. As a trial subject, I am willing to comply with the guidelines in this study and the requirements in the subject information to conduct the study;

3. If any adverse event occurs during the trial, I will immediately notify my study doctor;

4. If any adverse event caused by any reason occurs to me during the trial, the study doctor will provide me with active examination and

treatment;

5. I have the right to withdraw from the trial at any stage of the treatment process without affecting the study doctor's treatment of me;

6. Although the trial records will be kept confidential, regulatory authorities, the ethics committee, the investigator, the sponsor, and their designated personnel (monitors, auditors) may have access to them, and the above personnel are responsible for keeping my personal information confidential;

7. I guarantee that I have truthfully informed the researchers of any previous disease conditions and any treatment I have received or will receive;

8. I understand the potential benefits and risks of participating in this study, and I am willing to contribute to the progress of medicine;

9. I will receive a copy of this informed consent form signed by me and the researcher and dated.

Subject's Signature: _____

Date: _____ Year _____ Month _____ Day

Contact Phone Number: _____

If the subject is unable to sign the informed consent form due to lack of capacity, etc., the guardian shall sign on their behalf.

Guardian's Signature: _____

Date: _____ Year _____ Month _____ Day

Relationship with the Subject: _____

Reason the Subject Cannot Sign the Informed Consent Form:

I have given the subject sufficient time to ask questions concerning the subject information, informed consent form, trial protocol, and investigational product, and have answered them to the best of my ability.

Subject's Signature: _____

Date: _____ Year _____ Month _____ Day

Contact Phone Number: _____

----- (To be used only when appropriate) -----

If this consent form is read to the subject because the subject cannot read, an impartial witness, who is independent of the study or research team, must be present to witness the consent process. The impartial witness must also sign the following declaration:

I confirm that the information in the informed consent form and any other written information has been accurately explained to the subject. The subject clearly understood this information. The subject voluntarily agreed to participate in this research.

Impartial Witness Signature: _____

Date: _____ Year _____ Month _____ Day

Contact Phone Number: _____