Clinical Trial Protocol
Iranian Registry of Clinical Trials

11 Jun 2026

Comparison of two treatments corneal collagen cross-linking(CXL) and povidone-iodine 1% solution in the treatment of infectious corneal ulcers resistant to conventional drug treatment

Protocol summary

Study aim

Comparison of two treatments collagen cross-linking and povidone-iodine 1% solution in the treatment of infectious corneal ulcers resistant to conventional drug treatment

Design

A two-group, parallel, single-blind, randomized, phase 2 clinical trial enrolled 30 eyes.

Settings and conduct

After the examination by the cornea specialist and the confirmation of the diagnosis of corneal ulcer by culture and smear in the patients referred to Zahra Zahedan Ophthalmology Hospital, the patients will undergo routine and standard treatment for 3 days. In case there are no symptoms of improvement or the worsening process is stopped, the patients will be entered into the study in a block-random way in two groups in a one-sided blind manner after informed consent. The first group with corneal collagen cross-linking (CXL) and the second group with 1% betadine.

Participants/Inclusion and exclusion criteria

Every patient with infectious corneal ulcer resistant to routine treatment1 ؛- Leaving the study during research for any reason 2- Unwillingness to participate in the study 3- Absence of a regular clinical file 4- History or presence of previous eye disease 5- Systemic diseases that have been proven to be effective in the treatment process, such as diabetes, autoimmune diseases, etc. 6- Inability to follow up the patient

Intervention groups

In the first group, routine treatment is continued along with corneal collagen cross-linking (CXL) for the patient. The most accepted protocol is based on the original Dresden protocol. Also, the second group is related to treatment with betadine 1%. This treatment method will be local, in the loading phase, every 15 minutes for one hour and then one drop every three hours. Also, routine medical treatment is continued along with 1% betadine treatment.

Main outcome variables

Comparison of two treatment methods The effect of each method separately on the corneal wound

General information

Reason for update

Acronym

collagen cross-linking اختصاری نام CXL

IRCT registration information

IRCT registration number: **IRCT20221230056988N1**
Registration date: **2023-03-14, 1401/12/23**
Registration timing: **prospective**

Last update: **2023-03-14, 1401/12/23**
Update count: **0**

Registration date

2023-03-14, 1401/12/23

Registrant information

Name

Soroush Jamshidian

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 31 4264 5370

Email address

jamshidian.sory@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-03-21, 1402/01/01

Expected recruitment end date

2024-02-20, 1402/12/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of two treatments corneal collagen cross-linking(CXL) and povidone-iodine 1% solution in the treatment of infectious corneal ulcers resistant to conventional drug treatment

Public title

treatment of infectious corneal ulcers resistant

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Every patient with infectious corneal ulcer resistant to routine treatment

Exclusion criteria:

Withdrawal from the study during the research for any reason Unwillingness to participate in the study Absence of a regular clinical record History or presence of previous eye disease Systemic diseases have been proven to be effective in the treatment process, such as diabetes, autoimmune diseases, etc. Impossibility of patient follow-up

Age

No age limit

Gender

Both

Phase

2

Groups that have been masked

- Participant

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

Random assignment of patients to two groups is done by permuted block stratified randomization method. In this way, first, eligible referring patients are classified according to age and gender in the order of arrival. Then they are assigned to the desired group based on blocks of 4 (consisting of two groups A and B and two repetitions for each) randomly selected from among all the possible states of permutations. These blocks were created using statistical software R version 4.0.2

Blinding (investigator's opinion)

Single blinded

Blinding description

In order to blind the study for sampling, random allocation of eyes to two intervention groups in such a way that only the patients do not know which group they are in, and the implementation of the intervention and data collection before and after the study by the cornea specialist and the main researcher. is done Thus, patients are blinded in this study. They are unaware of grouping. The groups are provided as A and B.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Zahedan University of Medical Sciences

Street address

Al-Zahra Ophthalmology Hospital, Motahari Blvd, Khatam Square

City

Zahedan

Province

Sistan-va-Balouchestan

Postal code

3778998167

Approval date

2023-02-01, 1401/11/12

Ethics committee reference number

IR.ZAUMS.REC.1401.396

Health conditions studied

1

Description of health condition studied

corneal ulcer

ICD-10 code

H16.0

ICD-10 code description

Corneal ulcer

Primary outcomes

1

Description

Average size and area of the wound

Timepoint

Measurement of the average size and area of the wound before treatment, one day, three days, one week, 14 days, 21 days and 28 days after treatment.

Method of measurement

slit-lamp device in two axes (the largest size and the smallest size)

2

Description

Frequency of stromal infiltration in corneal ulcer

Timepoint

Frequency of stromal infiltration before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

slit-lamp device (from +4 to +1)

3

Description

Frequency of blunting of wound edges

Timepoint

Frequency of blunting of wound edges before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

Slit-lamp device +1 to +4

4

Description

Recovery time

Timepoint

Recovery time before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

From the patient's file

5

Description

Frequency of wound penetration

Timepoint

Frequency of wound penetration before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

slit-lamp device (grade one: limited to the anterior 1/3 of the cornea, grade two: limited to the anterior 2/3 of the cornea, grade three: involvement of the entire thickness of the cornea)

Secondary outcomes

1

Description

Frequency of pain

Timepoint

Frequency of pain before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

Questionnaire yes or no

2

Description

Frequency of visual acuity

Timepoint

Frequency of visual acuity before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

With questions and pen light: non-understanding of light (NLP), understanding of light (LP), understanding of hand movements (HM), counting fingers (CF) in meters

3

Description

Vascularization frequency

Timepoint

Frequency of vascularization before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

slit-lamp device (yes/no)

4

Description

Average hypopyon size

Timepoint

Average hypopyon size before treatment, one day, three days, one week, 14 days, 21 days, 28 days after treatment

Method of measurement

slit-lamp device (mm)

Intervention groups

1

Description

Intervention group: In the first group, the continuation of the routine treatment along with cross-linking (as described in the text) by CXL device (Avedro model from Tovana Radio Equipment Company) is performed for the patient:The most accepted protocol based on the original Dresden protocol is the epithelial harvesting approach described by Wollensak et al. in 2003. This approach includes 0.1% riboflavin along with UVA radiation (370nm; @3mw/cm2) which injects 4.5 J/cm2 into the cornea. The steps of the surgical protocol are as follows:1- The patient is covered with a cloth under sterile conditions and the cornea is numbed locally with 2-3 drops of 0.5% proparacaine or 0.5% tetracaine.2- The orbital areas are cleaned with 10% betadine and a speculum is placed.3- The corneal epithelium is removed in the central 7-9 mm, which includes the entire surface of the wound.4- The thickness of the cornea is measured with an ultrasound thickness meter to ensure that it is 400 microns thick.5- 0.1% iso-osmolar riboflavin in 20% dextran solution is dripped on the surface of the cornea every 2 to 3 minutes for 30 minutes.6- The patient is examined behind a slit lamp with blue light to ensure the complete penetration of riboflavin into the cornea (the examination of riboflavin is done in the anterior chamber with the presence of yellow dyes).7- Corneal pachymetry is measured again before UVA radiation.8- If there is no danger to continue the process, a spongy ring is placed around the limbus of the cornea with preservation of limbal stem cells.9- UVA light is focused directly on the area that lacks epithelium, to activate the stroma rich in

riboflavin.10- The light is illuminated for 30 minutes by continuing to pour riboflavin every three minutes.11- Alternatively, a balanced saline solution and an anesthetic drop is poured on the surface of the cornea to prevent drying and continued anesthesia.12- Corneal pachymetry is performed 20, 10, and 30 minutes after riboflavin drop to make sure that the thickness of the stroma remains more than 400 microns. If the pachymeter shows below 400 microns, the hypotonic riboflavin drop is used instead of the usual isotonic drop.13- After completing the treatment with UVA, a broad-spectrum antibiotic such as moxifloxacin is poured.14- At the end, after washing the eyes, the bandaged contact lens is used and the previous treatments are continued, and the patient remains hospitalized until the corneal wound is completely healed and is examined daily.

Category

Treatment - Surgery

2

Description

Intervention group: The second group is related to treatment with betadine 1%. The method of making Betadine 1% (10 mg/ml) from the composition (dissolution) of Povidone Iodine 10% solution (manufactured by Aburihan and Iran Naj companies, iodine which is not bactericidal and Povidone which is not disinfectant and pre-operative disinfectant) Preoperative Antiseptic (considered) is obtained with Balanced Salt Solution. This treatment method will be local, in the loading phase, one drop is used every 15 minutes for one hour and then every three hours. Also, routine medical treatment is continued along with 1% betadine treatment.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center
Al-Zahra Ophthalmology Hospital
Full name of responsible person
Soroush Jamshidian
Street address
Khatam Square, Shahid Motahari Blvd
City
Zahedan
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Sistan-va-Balouchestan
Postal code
98167 37789
Phone
+98 54 3321 9915
Email
jamshidian.sory@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Zahedan University of Medical Sciences
Full name of responsible person
Dr. Mohammad Hossein Validad
Street address
Medical Sciences Campus, Dr. Hasabi Square
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9816743463
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+98 54 3329 5765
Email
it@zaums.ac.ir
Web page address

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Zahedan University of Medical Sciences
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
Zahedan University of Medical Sciences
Full name of responsible person
Soroush Jamshidian
Position
resident
Latest degree
Medical doctor
Other areas of specialty/work
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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
Yes - There is a plan to make this available
Data Dictionary
Yes - There is a plan to make this available
Title and more details about the data/document
All data can potentially be shared after de-identification of subjects after the end of the study.
When the data will become available and for how long
The beginning of the access course from 1403
To whom data/document is available
Researchers working in academic and scientific institutions will be available, or people who are also engaged in industry
Under which criteria data/document could be used
All researchers and people who need data to carry out diagnostic and therapeutic measures and conduct further research related to corneal ulcers, data and documentation are provided to them depending on the conditions and request of the researcher, and the use and analysis of data is allowed without any restrictions. is.
From where data/document is obtainable
To receive documents or data, send a request for the scope to Jamshidian.soru@gmail or call Dr. Jamshidian on phone number 00989056068899.
What processes are involved for a request to access data/document
After the request, whether by e-mail, SMS or phone, the information will be sent to the applicant within a maximum of one week
Comments