

Clinical Trial Protocol

Iranian Registry of Clinical Trials

16 Sep 2026

Evaluating the effectiveness of silymarin in preventing vancomycin-induced nephrotoxicity in hospitalized patients

Protocol summary

Study aim

Determining the effectiveness of silymarin in preventing vancomycin-induced nephrotoxicity in patients admitted to Namazi and Shahid Faqihi hospitals in Shiraz

Design

The clinical trial has two control and treatment groups, double-blind, randomized by permutation block method.

Settings and conduct

A multicenter, randomized, double-blind, placebo-controlled clinical trial in two educational medical centers in Shiraz including Namazi Hospital and Shahid Faqihi Hospital Preparing the placebo as the same as Livergol tablets regarding size, color, and shape The unawareness of the nursing staff about groups The unawareness of the physician and assistant researcher about groups

Participants/Inclusion and exclusion criteria

Patients referred to teaching hospitals who have been diagnosed with an indication for the use of systemic (injectable) vancomycin for at least 7 days. The patients are hemodynamically stable, willing to participate in the study, receiving vancomycin injection for at least 7 days, absence of hypersensitivity reaction following silymarin consumption, no confirmed history of acute kidney injury, no confirmed history of chronic kidney disease, no vancomycin use in the past 14 days, no simultaneous use of drugs or compounds with antioxidant effect, no simultaneous use of drugs with prominent nephrotoxicity, and oral tolerance to drugs

Intervention groups

The two treatment and control groups will be given vancomycin based on the treatment protocol. However, in the patients of the treatment group, silymarin tablets (Livergol) 140 mg three times a day will be given orally as long as vancomycin is prescribed.

Main outcome variables

Increase in serum creatinine level; Development of acute tubular necrosis (ATN); The change in oxidant and antioxidant markers in serum

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20161010030246N6**

Registration date: **2023-05-27, 1402/03/06**

Registration timing: **prospective**

Last update: **2023-05-27, 1402/03/06**

Update count: **0**

Registration date

2023-05-27, 1402/03/06

Registrant information

Name

Iman Karimzadeh

Name of organization / entity

Shiraz University of Medical Sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-06-13, 1402/03/23

Expected recruitment end date

2023-12-14, 1402/09/23

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Evaluating the effectiveness of silymarin in preventing vancomycin-induced nephrotoxicity in hospitalized patients

Public title

Evaluating the effectiveness of silymarin in preventing vancomycin nephrotoxicity

Purpose

Prevention

Inclusion/Exclusion criteria**Inclusion criteria:**

Hemodynamic stability (mean arterial blood pressure above 70 mmHg and/or systolic blood pressure above 90 mmHg. Willingness to participate in the study Receiving vancomycin intravenously for at least 1 week with the maintenance dosage regimen of 30-45 mg/kg/day or 1-2 g twice a day. Notably, the vancomycin regimen is the same in both hospitals.

Exclusion criteria:

Confirmed history of acute kidney injury Confirmed history of chronic kidney disease Taking vancomycin within the last 14 days Taking silymarin orally at least during the past day Confirmed history of hypersensitivity reactions following oral consumption of silymarin Simultaneous use of agents with antioxidant activity such as vitamin C, vitamin E, vitamin A, melatonin Receiving drugs with high nephrotoxicity potential such as aminoglycosides, amphotericin b, colistin Oral intolerance to drugs

Age

From **18 years** old

Gender

Both

Phase

3

Groups that have been masked

- Participant
- Care provider
- Investigator
- Data analyser

Sample size

Target sample size: **80**

More than 1 sample in each individual

Number of samples in each individual: **40**

Forty patients are in the intervention (Silymarin) and 40 patients in the control group (Placebo).

Randomization (investigator's opinion)

Randomized

Randomization description

Block randomization (quadruple blocks): All possible blocks are arranged as follows: block 1: ABAB block 2: AABB block 3: ABBA block 4: BBAA block 5: BABA block 6: BAAB. We need 20 blocks to select 80 people. We randomly select these blocks from the numbers 1 to 6. For example, number 6 is chosen as the first block and number 2 as the forth block. The people who enter the study are given B-A-A-B-A-A-B-B, respectively. Finally, group A receives placebo and group B receives silymarin.

Blinding (investigator's opinion)

Double blinded

Blinding description

The researcher does not know whether the drug he gives to the patient is a placebo or the original drug. On the other hand, the participant (patient) is also unaware of whether the drug given to him is a placebo or the original drug.

Placebo

Used

Assignment

Parallel

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics Committee of Shiraz Medical Sciences

Street address

Research and Technology Vice-Chancellor of Shiraz University of Medical Sciences-Shiraz Zand Street-Central Building of Shiraz University of Medical Sciences-7th Floor-Research and Technology Vice-Chancellor

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Approval date

2023-05-21, 1402/02/31

Ethics committee reference number

IR.SUMS.REC.1402.073

Health conditions studied**1****Description of health condition studied**

Vancomycin-induced nephrotoxicity in hospitalized patients

ICD-10 code

N14

ICD-10 code description

Drug- and heavy-metal-induced tubulo-interstitial and tubular conditions

Primary outcomes**1****Description**

Vancomycin nephrotoxicity as an increase in serum creatinine by ≥ 0.3 mg/dl within 48 hrs or an increase in serum creatinine to ≥ 1.5 times baseline within the previous seven days

Timepoint

Sampling of urine and blood (5 ml) of patients will be done before starting the drug (day zero) and on days 1, 2, 3, 5, 7, 10, and 14 of vancomycin treatment

Method of measurement

Measurement of serum creatinine is done by using an autoanalyzer instrument.

2

Description

Acute tubular necrosis is defined as fractional excretion of sodium more than 2% in the absence of diuretic treatment.

Timepoint

Sampling of urine and blood (5 ml) of patients will be done before starting the drug (day zero) and on days 1, 2, 3, 5, 7, 10, and 14 of vancomycin

Method of measurement

Measurement of serum as well as urine creatinine along with serum as well as urine sodium is done by using an autoanalyzer instrument.

Secondary outcomes

1

Description

Serum level of malondialdehyde, total antioxidant capacity, and glutathione

Timepoint

At days 0 and 14 of vancomycin treatment

Method of measurement

Serum level of malondialdehyde, total antioxidant capacity, and glutathione are measured by the ELISA technique.

Intervention groups

1

Description

Intervention group: In this group, as long as vancomycin is received, silymarin tablets from the Gol Daru company (Livergol) are prescribed orally in the amount of 140 mg three times a day orally.

Category

Prevention

2

Description

Control group: In this group, along with vancomycin, placebo tablets 140 mg three times a day are given orally.

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

Namazi and Shahid Faqihi Hospital, Shiraz

Full name of responsible person

Iman Karimzadeh

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

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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

Shiraz 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

Shiraz University of Medical Sciences

Full name of responsible person

Iman Karimzadeh

Position

Associate Professor

Latest degree

Specialist

Other areas of specialty/work

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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

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

Statistical Analysis Plan

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

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

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