

Clinical Trial Protocol

Iranian Registry of Clinical Trials

01 Aug 2026

Evaluation of magnesium sulfate efficacy in prevention of acute kidney injury induced by vancomycin+piperacillin-tazobactam combination

Protocol summary

Study aim

Evaluation of magnesium sulfate efficacy in prevention of acute kidney injury induced by vancomycin+piperacillin-tazobactam combination

Design

This is an open-label randomized clinical trial. Fifty four adults will equally be assigned to magnesium or control group according to the permuted block randomization method.

Settings and conduct

Patients of intensive care units of Imam Khomeini Hospital Complex with inclusion criteria of the study will be randomly assigned to either the magnesium or the control group.

Participants/Inclusion and exclusion criteria

Patients (18-75 years old) with no history of renal failure who are candidate to receive vancomycin + piperacillin-tazobactam regimen empirically or based on microbial culture will be included.

Intervention groups

All patients will receive vancomycin + piperacillin-tazobactam. Patients in the magnesium group will receive intravenous magnesium sulfate to achieve the target serum Mg level around 3 mg/dL and this level will be maintained for 5 days. The control group will receive the same volume of normal saline. In patients in the control group, if serum magnesium level drops to less than 1.7 mg/dl at any time of the intervention course, it will be corrected toward ≥ 1.7 mg/dl.

Main outcome variables

Incidence of acute kidney injury

General information

Reason for update

Acronym

MSIVPTN

IRCT registration information

IRCT registration number: **IRCT20100228003449N26**

Registration date: **2019-10-20, 1398/07/28**

Registration timing: **registered_while_recruiting**

Last update: **2019-10-20, 1398/07/28**

Update count: **0**

Registration date

2019-10-20, 1398/07/28

Registrant information

Name

Hossein Khalili

Name of organization / entity

Tehran University of Medical Sciences

Country

Iran (Islamic Republic of)

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+98 21 6695 4715

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-09-23, 1398/07/01

Expected recruitment end date

2020-03-20, 1399/01/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Evaluation of magnesium sulfate efficacy in prevention of acute kidney injury induced by vancomycin+piperacillin-tazobactam combination

Public title

Magnesium sulfate in prevention of vancomycin+piperacillin-tazobactam nephrotoxicity

Purpose
Prevention

Inclusion/Exclusion criteria
Inclusion criteria:
Patients with age between 18-75 years Patients without history of renal failure Patients with indication to receive vancomycin+piperacillin-tazobactam
Exclusion criteria:
known history of hypersensitivity reactions to vancomycin and betalactams Pregnancy Patients with creatinine clearance less than 60 ml/min

Age
From **18 years** old to **75 years** old

Gender
Both

Phase
2-3

Groups that have been masked
No information

Sample size
Target sample size: **54**

Randomization (investigator's opinion)
Randomized

Randomization description
Randomization will be done according to the blocks randomization method. Regarding to the sample size, nine blocks will be chosen. Random sequences will be created by SAS software.

Blinding (investigator's opinion)
Not blinded

Blinding description

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids
empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics Committee of Tehran University Of Medical Scienses
Street address
Ghods Ave. Tehran University of Medical Sciences, Tehran, Iran
City
Tehran
Province
Tehran
Postal code
1417614411
Approval date
2019-09-02, 1398/06/11

Ethics committee reference number
IR.TUMS.TIPS.REC.1398.080

Health conditions studied

1

Description of health condition studied

Acute Kidney Injury

ICD-10 code

N17.0

ICD-10 code description

Acute renal failure with tubular necrosis

Primary outcomes

1

Description

Incidence of acute kidney injury

Timepoint

Daily

Method of measurement

Increase in serum creatinine by 0.3 mg/dl or more than 50% from the baseline value

2

Description

Time of acute kidney injury occurrence

Timepoint

Daily

Method of measurement

Recording of incidence time

Secondary outcomes

1

Description

Length of ICU stay

Timepoint

Daily

Method of measurement

Recording of stay days

Intervention groups

1

Description

Magnesium group: This patients will receive vancomycin (15mg/kg every 8-12 hours) + piperacillin-tazobactam (4.5 g every 6 hour) concomitant with intravenous magnesium sulfate on the basis of rule of thumb (each 1g intravenous magnesium sulfate raises 0.15 mEq/l of serum magnesium) to achieve the target serum Mg level around 3 mg/dL. This level will be maintained for 5 days. Every 2 grams of magnesium sulfate will be diluted in 50 ml normal saline and will be infused over 2- hour period.

Category

2**Description**

Control group: This patients will receive vancomycin (15mg/kg every 8-12 hours) + piperacillin-tazobactam (4.5 g every 6 hour) concomitant with the same volume of normal saline. If serum magnesium level drops to less than 1.7 mg/dl at any time of the intervention course, it will be corrected toward ≥ 1.7 mg/dl.

Category

Prevention

Recruitment centers1**Recruitment center****Name of recruitment center**

Imam Khomeini Hospital Complex

Full name of responsible person

Hossein Khalili

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Keshavarz Boulevard

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Sponsors / Funding sources1**Sponsor****Name of organization / entity**

Tehran University of Medical Sciences

Full name of responsible person

Mohammad Ali Sahraian

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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

Tehran 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**

Tehran University of Medical Sciences

Full name of responsible person

Hossein Khalili

Position

Professor

Latest degree

Specialist

Other areas of specialty/work

Clinical Pharmacy

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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

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is 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

Yes - There is a plan to make this available

Analytic Code

Yes - There is 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

Results of the study will be published. The study protocol and statistical analysis will be included in the manuscript

When the data will become available and for how long

One year after finishing the study, data will be published and will be available in databases

To whom data/document is available

After permission from the sponsor, data of the study will be available for academic researchers, physicians and scientific institutes

Under which criteria data/document could be used

Other researchers are permitted to include the results in their systematic reviews and meta-analysis

From where data/document is obtainable

For this you may ask Hossein Khalili through following information: Address: Department of Clinical Pharmacy, Faculty of Pharmacy, Tehran University of Medical Sciences, 16 Azar Ave., Tehran, Iran Postal code: 1417614411 E-mail: khalilih@tums.ac.ir

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

After receiving the query, dependent on the requested data, the scientific responsible person of the study will response to the query in coordinate with the sponsor within 2 weeks

Comments