Evaluation of the effectiveness of N-acetylcysteine in the prevention of colistin-induced nephrotoxicity: a randomized controlled clinical trial

Protocol summary

Study aim
Recommendation for Use of Acetylcysteine in Patients Receiving colistin, If Positive Results Were Observed

Design
Randomized Controlled Clinical Trial

Settings and conduct
This study is performed in Alzahra hospital affiliated to Isfahan University of Medical Sciences. Patients who received colistin for a standard dose of 4.5 million units of sodium colistemate every 12 hours for any reason and met the inclusion criteria were randomly divided into two groups (N-acetylcysteine) and control. Patients in the drug group received 600 mg of N-acetylcysteine twice daily for 10 days, starting with colistin, whereas patients in the control group received colistin only. Serum level of creatinine (SCr) and blood urea nitrogen (BUN) as well as creatinine clearance (CrCl) will be recorded before the start of interventions, every other day during the study, and 12 hours after the last dose of vancomycin in 10th day of therapy, as well as serum NGAL levels before the intervention and 5 days after the intervention (Before administration of colistin) will be recorded for all patients. Finally, by means of statistical tests, mean serum creatinine, BUN, CrCl and NGAL measured at time points and the incidence of acute renal injury will be compared between the NAC and control groups according to the number of cases per stage.

Participants/Inclusion and exclusion criteria
50> age > 18 years; receiving Clistin at 4.5 million units every 12 hours; creatinine clearance > 90 ml/min; not having proteinuria and/or hematuria; not having any renal disorder; not using any other nephrotoxic drug; No history of NAC allergy

Intervention groups
Drug Group: Taking N-acetylcysteine 600 mg Twice Daily with Colistin; Control Group: Taking Colistin alone

Main outcome variables
Serum Creatinine; Blood Urea Nitrogen; Creatinine Clearance; Serum Level Of NGAL; The Number of Cases of Acute Kidney Injury

General information
Reason for update
Acronym
IRCT registration information
IRCT registration number: IRCT20150721023282N6
Registration date: 2019-12-19, 1398/09/28
Registration timing: registered_while_recruiting

Last update: 2019-12-19, 1398/09/28
Update count: 0
Registration date
2019-12-19, 1398/09/28
Registrant information
Name
Rasool Soltani
Name of organization / entity
Isfahan University of Medical Sciences
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Email address
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Recruitment status
Recruitment complete
Funding source

Expected recruitment start date
2019-09-22, 1398/06/31
Expected recruitment end date
2020-03-18, 1398/12/28
Actual recruitment start date
empty
Actual recruitment end date
empty
Evaluation of the effectiveness of N-acetylcysteine in the prevention of colistin-induced nephrotoxicity: a randomized controlled clinical trial

Purpose
Prevention

Inclusion/Exclusion criteria

Inclusion criteria:
- Take colistin at a dose of 4.5 million units every 12 hours
- Creatinine Clearance > 90 ml/min (Based on CKD-EPI Formula)

Exclusion criteria:
- Underlying kidney disorder
- Receiving other nephrotoxic drugs

Age
From 18 years old to 50 years old

Gender
Both

Phase
3

Groups that have been masked
No information

Sample size
Target sample size: 60

Randomization (investigator's opinion)
Randomized

Randomization description
Block randomization: Blocks of 4 will be used and patients will be assigned to drug and control groups based on the determined sequences in the blocks.

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
Ethical Committee of Isfahan University of Medical Sciences
Street address
Isfahan University of Medical Sciences, Hezar-Jerib Ave.
City
Isfahan
Province
Isfehan
Postal code
8174673461

Approval date
2019-08-03, 1398/05/12

Ethics committee reference number
IR.MUI.RESEARCH.REC.1398.361

Health conditions studied

1
Description of health condition studied
ICD-10 code
ICD-10 code description

Primary outcomes

1
Description
Serum Creatinine

Timepoint
At baseline and 2, 4, 6, 8, and 10 days after initiation of intervention

Method of measurement
Spectrophotometry

2
Description
Blood Urea Nitrogen

Timepoint
At baseline and 2, 4, 6, 8, and 10 days after initiation of intervention

Method of measurement
Spectrophotometry

3
Description
Creatinine Clearance

Timepoint
At baseline and 2, 4, 6, 8, and 10 days after initiation of intervention

Method of measurement
CKD-EPI Formula

4
Description
NGAL serum level

Timepoint
At baseline and 5 days after initiation of intervention

Method of measurement
NGAL Measurement Kit

5
Description
### The number of patients with acute kidney injury

**Timepoint**
End of intervention

**Method of measurement**
counting

### Secondary outcomes
empty

### Intervention groups

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<tr>
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<th>Description</th>
<th>Category</th>
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<tbody>
<tr>
<td>1</td>
<td>Intervention group: N-acetylcysteine, 600 mg, twice daily, for 10 days, PO</td>
<td>Prevention</td>
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<tr>
<td>2</td>
<td>Control group: Without intervention</td>
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### Recruitment centers

<table>
<thead>
<tr>
<th></th>
<th>Recruitment center</th>
<th>Name of recruitment center</th>
<th>Full name of responsible person</th>
<th>Street address</th>
<th>City</th>
<th>Province</th>
<th>Postal code</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Al-Zahra Hospital</td>
<td>Rasool Soltani</td>
<td>Soffeh Ave.</td>
<td>Isfahan</td>
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<td>8174675731</td>
<td>+98 31 3620 2020</td>
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</tr>
</tbody>
</table>

### Sponsors / Funding sources

<table>
<thead>
<tr>
<th></th>
<th>Sponsor</th>
<th>Name of organization / entity</th>
<th>Full name of responsible person</th>
<th>Street address</th>
<th>City</th>
<th>Province</th>
<th>Postal code</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Esfahan University of Medical Sciences</td>
<td>Shaghayegh Haghjooy Javanmard</td>
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</tbody>
</table>

### Person responsible for general inquiries

**Contact**
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**Person responsible for updating data**

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**Sharing plan**

**Deidentified Individual Participant Data Set (IPD)**

No - There is not a plan to make this available

**Justification/reason for indecision/not sharing IPD**

More data is not present.

**Study Protocol**

No - There is not a plan to make this available

**Statistical Analysis Plan**

No - There is not a plan to make this available

**Informed Consent Form**

No - There is not a plan to make this available

**Clinical Study Report**

No - There is not a plan to make this available

**Analytic Code**

No - There is not a plan to make this available

**Data Dictionary**

No - There is not a plan to make this available