Clinical Trial Protocol
Iranian Registry of Clinical Trials

23 Feb 2026

The effect of simultaneous supplementation of oral vitamin D and intravenous vitamin C on inflammatory indices, oxidative stress and clinical outcomes in patients with acute respiratory failure admitted to the intensive care unit

Protocol summary

Study aim
Determining the effect of simultaneous supplementation of oral vitamin D and intravenous vitamin C on inflammatory indices, oxidative stress and clinical outcomes in patients with acute respiratory failure admitted to the intensive care unit

Design
A controlled, parallel-group, triple-blind, randomized, phase 3 clinical trial on 64 patients. Blocks of 4 sites from the online site (www.sealedenvelope.com) will be used for randomization.

Settings and conduct
The study is conducted in a triple-blind manner in Firoozgar Hospital. The duration of the intervention is 5-10 days in the form of daily intake of 5000 international units of oral vitamin D supplement and 2000 mg of injectable vitamin C or placebo. At the beginning of the study, people with acute respiratory failure disease will be included in the study based on the definitive diagnosis of the doctor and based on the mentioned entry criteria and filling the informed consent form.

Participants/Inclusion and exclusion criteria
Inclusion criteria: hospitalization in the intensive care unit Age above 18 years and less than 85 years suffering from acute respiratory failure exclusion criteria: Death or hospitalization of the patient less than 3 days from the start of the intervention Creating contraindications for the administration of vitamin D and vitamin C according to the physician's opinion at the time of the study

Intervention groups
In the intervention group, patients will receive daily 5000 international units of vitamin D in the form of oral drops and 2000 mg of vitamin C in the serum. While the patients of the control group will receive the same oral drops of vitamin D and the same serum without vitamin C.

Main outcome variables
The concentration of interleukin 6 and the duration of connection to the ventilator

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20090822002365N29**
Registration date: **2023-08-05, 1402/05/14**
Registration timing: **prospective**

Last update: **2023-08-05, 1402/05/14**
Update count: **0**

Registration date
2023-08-05, 1402/05/14

Registrant information

Name
Mohammad Reza Vafa

Name of organization / entity
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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2023-08-06, 1402/05/15

Expected recruitment end date
2024-03-05, 1402/12/15
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
The effect of simultaneous supplementation of oral vitamin D and intravenous vitamin C on inflammatory indices, oxidative stress and clinical outcomes in patients with acute respiratory failure admitted to the intensive care unit

Public title
effect of vitamin D and vitamin C in patients with acute respiratory failure
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
hospitalized patients in the intensive care unit suffering from acute respiratory failure (PaO2 ≤ 60 mmHg or PaCO2 > 45 mmHg) not Suffering from a nervous system disease that prevents the patient from being separated from the mechanical ventilation device not suffering from AIDS not suffering from Liver failure not Suffering from kidney diseases including nephrotic syndrome- not suffering from gout not being Pregnancy and breastfeeding Vitamin D level below 50 ng/mL not suffering from hypercalcemia (total calcium > 10.6 mg/dL) not Suffering from hyperphosphatemia (> 1.45 mmol/liter) not suffering from Tuberculosis not suffering from sarcoidosis not Passing more than 24 hours from the diagnosis of the disease to the time of entering the study not participating in other interventional studies in the last 30 days not consuming vitamin D and vitamin C supplements in the last 30 days
Exclusion criteria:
Death or hospitalization of the patient less than 3 days from the start of the intervention Unwillingness to continue studying and cooperating in it developing contraindications for the administration of vitamin D and vitamin C according to the opinion of the attending physician at the time of the study.
Age
From **18 years** old to **85 years** old
Gender
Both

Phase
3
Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size
Target sample size: **64**
More than 1 sample in each individual
Number of samples in each individual: **32**
one patient with with acute respiratory failure that admitted to the intensive care unit
Randomization (investigator's opinion)
Randomized
Randomization description
For randomized allocation performing, permuted block randomization will be used by blocks with size of 4. According to the sample size of 64subjects, 12 blocks will be generated using the online site (www.sealedenvelope.com). In order to allocation concealment in the randomized process, unique codes will be used on the vitamin d drop boxes ,serums containing vitamin c and placebo that is generated by the software. Participants will be entered into study based on the produced sequence. The vitamin d drop boxes ,serums containing vitamin c and placebo will be allocated to the nurses for administration with code on them. Therefore, participants and nurses will be unaware of the type of intervention that will receive, as well as the random sequence which will be hidden and unpredictable.
Blinding (investigator's opinion)
Triple blinded
Blinding description
In order to performing the triple-blinded of study, before study beginning, the vitamin d drops boxes and placebo and serum with and without vitamin c can be provided by someone other than the researcher, and the placebo drops and serum without vitamin c in appearance are similar to the supplementation drops and serum. The researcher, patients, nurses and statistical analyzer are not be aware about the allocation of studied subjects in each group during the evaluation of the studied outcomes until the end of the intervention period, conducting experiments and date analysis.
Placebo
Used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics Committee of Iran University of Medical Sciences
Street address
Iran University of Medical Sciences, Hemat Highway, next to Milad Tower, Tehran
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Approval date
2023-06-13, 1402/03/23

Ethics committee reference number
IR.IUMS.REC.1402.210

Health conditions studied

1

Description of health condition studied
Acute respiratory failure (ARF) is defined as a condition in which the patient's arterial oxygen pressure (PaO2) is less than 60 mmHg and/or arterial carbon dioxide pressure (PaCO2) is more than 45 mmHg. This result occurs when the weakness of the respiratory system leads to the inability to transfer oxygen from the air to the blood or to remove carbon dioxide from the blood and transfer it to the surrounding air, and various mechanisms such as hypoventilation, diffusion disorder, shunt, ventilation mismatch Perfusion or a combination of the mentioned items play a role in its creation. Acute respiratory failure may be caused by several diseases, including pneumonia, chronic obstructive pulmonary disease (COPD), adult respiratory distress syndrome (ARDS), and congestive heart failure (CHF).

ICD-10 code
J96.0

ICD-10 code description
Acute respiratory failure

Primary outcomes

1

Description
interlukin6

Timepoint
The results are evaluated at the beginning of the study and at the end of the 10th da

Method of measurement
The level of interlukin6 in serum is with ELISA method

Secondary outcomes

1

Description
The duration of connection to the ventilator

Timepoint
the end of the study

Method of measurement
From the patient's file

2

Description
The duration of connection to the ventilator

Timepoint
28th and 90th day of study

Method of measurement
From the patient's file

Intervention groups

1

Description
Intervention group: This group will receive daily 5000 international units of vitamin D in the form of oral drops (5 cc oral drops) and 2000 mg of vitamin C intravenously in the serum.

Category
N/A

2

Description
Control group: This group will receive daily 5 cc of edible oil similar to vitamin D drops in terms of shape, color and smell as placebo. In addition, this group will receive daily serums similar to the intervention group but without vitamin C, which are completely similar to the serum containing vitamin C as placebo.

Category
N/A

Recruitment centers

1

Recruitment center

Name of recruitment center
Firoozgar Hospital

Full name of responsible person
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Sponsors / Funding sources

1

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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
Iran 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
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is 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
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

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

Title and more details about the data/document

If there is a request to use the data of this study in a meta-analysis or systematic review, the primary and secondary results of this study will be provided to the requesters in the form of joint research.

When the data will become available and for how long

Since the publication of the article resulting from this study, it will be possible to make the data available for the next two years. This time will probably be from the end of 2024 to the end of 2026.

To whom data/document is available

Known researchers from prestigious academic research centers.

Under which criteria data/document could be used

If the intellectual rights of the providers of this research are preserved and the proposed research is aimed at the goals of the current study or solving the clinical problem of the target group of this study, there is a possibility of cooperation.

From where data/document is obtainable

Direct contact with the email address or phone number of the responsible author or the administrators of this research project.

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

After the contact of the researchers, the process of accessing the data and conducting joint research with the requesters will be done for a maximum of two months.

Comments