Clinical Trial Protocol
Iranian Registry of Clinical Trials

06 Jul 2026

A prospective randomized controlled trial to compare recombinant tissue-type plasminogen activator (rt-PA) and standard treatmentin in patients with ARDS induced by COVID-19

Protocol summary

Study aim

Comparing recombinant tissue-type plasminogen activator (rt-PA) and standard treatment in patients with ARDS induced by COVID-19.

Design

Randomized clinical trial with control group; Randomized by quadruple block method; with parallel group design; with blinded outcome assessment (single blind), phase 3 on 30 cases.

Settings and conduct

The study site is the Intensive Care Unit for COVID-19 patients at Shariati Hospital in Tehran

Participants/Inclusion and exclusion criteria

Inclusion criteria: People referring to the hospital with symptoms of clinical stenosis syndrome such as: shortness of breath, fever, cough, hypoxia, imaging in favor of ARDS & hypoxia,Non-pregnant man or woman over 18 years of age, confirmation of COVID-19 by PCR with imaging findings Non-inclusion criteria: Patient dissatisfaction, Bleeding tendency ,Previous hypersensitivity to Alteplase , Active internal bleeding , Severe uncontrolled hypertension, Severe renal disease (GFR<50 ml/min).

Intervention groups

Intervention group: Altplas 50 mg intravenously up to 0.9 mg per kg body weight in addition to the national treatment protocol of COVID-19 plus subcutaneous injection of Anaxaparin 1 mg per kg (15 patients). Control group: COVID-19 treatment protocol plus subcutaneous injection of enoxaparin1 mg per kg bid (15 patients).

Main outcome variables

oxygenation t, mechanical ventilation free days,Disease severity,survival,Drug Reaction

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20200415047080N1**
Registration date: **2020-11-02, 1399/08/12**
Registration timing: **registered_while_recruiting**

Last update: **2020-11-02, 1399/08/12**
Update count: **0**

Registration date

2020-11-02, 1399/08/12

Registrant information

Name
Rasoul Aliannejad
Name of organization / entity
Country
Iran (Islamic Republic of)
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+98 21 8490 2460
Email address
aliannejad@tums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-09-22, 1399/07/01

Expected recruitment end date

2021-01-20, 1399/11/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title
A prospective randomized controlled trial to compare recombinant tissue-type plasminogen activator (rt-PA) and standard treatmentin in patients with ARDS induced by COVID-19

Public title
Effectiveness of Tissue plasminogen activator (TPA) for treatment of ARDS induced by Covid-19

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
A person with laboratory confirmation of COVID-19 infection clinical and radiological confirmation of ARDS The confirm case of covid-19 in patients with ARDS (PaO2/FiO2a ≤ 300 or sat o2≤ 315 mmHg (with PEEP or CPAP ≥ 5 cmH2O, or non-ventilated)

Exclusion criteria:
Bleeding tendency Coagulopathy (INR>1.5) Thrombocytopenia (plt< 50000) Previous hypersensitivity to Alteplase Active internal bleeding Severe uncontrolled hypertension Severe renal disease (GFR<50 ml/min) History of recent stroke Hemoptysis at admission Presence of any active malignancy (other than non-melanoma skin cancer) that required treatment within the last 2 years Moderate to severe liver failure (Childs-Pugh Score > 12) Major trauma in the prior 30 days Moribund patient not expected to survive the next 24 hours. No consent/inability to obtain consent

Age
From **18 years** old to **70 years** old

Gender
Both

Phase
3

Groups that have been masked
No information

Sample size
Target sample size: **30**

Randomization (investigator's opinion)
Randomized

Randomization description
Patients are randomly assigned to one of the intervention or control groups by quadruple block method. After determining the volume of each block, the letter A is considered for the intervention group and the letter B for the control group. All permutation combinations of the letters A, A, B and B, which are 6 different combinations, are written on 6 cards and a digit is randomly selected from the digits 1 to 6. For example, if the number 2 is selected, it means that the first person in the intervention group, the next two people in the control group and the fourth person in the intervention group and continue until the sample size reaches the quorum.

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 Sciences

Street address
Dr. Shariati Hospital, Jalal Al-Ahmad Highway

City
Tehran

Province
Tehran

Postal code
1411713135

Approval date
2020-03-23, 1399/01/04

Ethics committee reference number
IR.TUMS.VCR.REC.1399.025

Health conditions studied

1

Description of health condition studied
COVID-19

ICD-10 code
U07.1

ICD-10 code description
COVID-19 induced ARDS

Primary outcomes

1

Description
The difference of PaO2/FiO2 or S/F ratio between two groups [Time Frame: 72 h after randomization

Timepoint
24 Hours from treatment till 72 h

Method of measurement
measurement of S/F ratio or Po2?Fio2 with pulseoxymetry or Arterial Blood gas (ABG)

2

Description
Disease severity

Timepoint
day 3,7, 14,28

Method of measurement
WHO 8-score ordinal scale

3

Description
survival in patients with ARDS
Timepoint
28 day after treatment
Method of measurement
observation of patients status

4

Description
Time to Ventilator Free state
Timepoint
from treatment time to two weeks
Method of measurement
counting the days

5

Description
Adverse Drug Reaction after tratment
Timepoint
Daily
Method of measurement
patient status observation and lab data monitoring

Secondary outcomes

1

Description
Evaluation of ARDS mortality from COVID-19
Timepoint
From the time of admitted in the intensive care unit to the time of death
Method of measurement
Informed in clinical file

2

Description
Evaluation of hospital discharge status of patients with ARDS caused by COVID-19
Timepoint
From the time of admitted in the intensive care unit to the time of discharge
Method of measurement
Informed in clinical file

Intervention groups

1

Description
Intervention group: 15 cases : A-Alteplase (TPA) 25-50 mg (half of the maximum dose 0.9 / kg /day) over 2 hours intravenous continuing by 25-50 /22 hours up to maximum dose of 0.9 mg/kg/d. This tPA injection may be repeated for 2 days and the patient's condition (PT level PTT, SPO2 and D- dimer) is observed and checked. After the end of TPA injection, subcutaneous injection of Enoxaparin will be started as 1 mg per kilogram body weight for the patient. Enoxaparin could be continued up to 7 days upon the condition of the patient. The patients will receive regular care and treatment for COVID-19 induced ARDS.
Category
Treatment - Drugs

2

Description
Control group: They will take routine treatment approved by the Ministry of Health for patients with adult respiratory distress from COVID 19,Also the subcutaneous injection of Enaxaparin one mg per kilogram of body weight for the patient added to their treatment .
Category
Treatment - Drugs

Recruitment centers

1

Recruitment center
Name of recruitment center
Shariati Hospital affiliated to Tehran University of Medical Sciences
Full name of responsible person
Rasoul Aliannejad
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Shariati hospital,Jalal Al-Ahmad three ways, North Kargar street
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Tehran University of Medical Sciences
Full name of responsible person
Mohhamad Ali Sahraian
Street address
Office of the Vice Chancellor for Research, North Door of the University, Building No. 1 of the Faculty of Medicine, Poursina street, Ghods street, Enghelab street
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Web page address

Grant name
Tissue plasminogen activator for treatment of ARDS induced by Coronavirus infection, A Phase 1/2 clinical trial study

Grant code / Reference number
47125-101-1-99

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
Rasoul Aliannejad

Position
Professor at Tehran University of Medical Sciences

Latest degree
Subspecialist

Other areas of specialty/work
Medical Education

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Person responsible for scientific inquiries

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Position
Professor

Latest degree
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Person responsible for updating data

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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