Dabbagh et al. Trials (2020) 21:919
https://doi.org/10.1186/s13063-020-04815-z

Trials

LETTER Open Access

The effect of surfactant on clinical outcome of patients with COVID-19 under mechanical ventilation: A structured summary of a study protocol for a randomised controlled trial

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Abstract

Objectives: Assessing the effect of surfactant on clinical outcome in patients with COVID-19 under mechanical ventilation

Trial design: **Single centre**, two arm, parallel group (1:1 allocation ratio), randomised superiority trial with blinded care and outcome assessment.

Participants: Inclusion criteria: Adult COVID-19 patients admitted to the ICU in Modarres hospital, Tehran, Iran (age range of 18 to 99 years) with moderate to severe ARDS (based on definition of P/F ratio) requiring auxiliary respiratory devices (either intubation or face mask).
Exclusion criteria:

- Existence of a major underlying pulmonary disease in addition to COVID-19
- Underlying congenital heart disease
- Patients needing extracorporeal membrane oxygenation (ECMO)
- ARDS primarily due to any other reason rather than COVID-19
- The primary source of pulmonary involvement was bacterial pneumonia or any other etiology except for COVID-10 induced lung involvement
- Those who refused to continue the study (either the patient or their family)
- any patient had any sign of healing before entering the study leading to discharge from ICU in less than 12 hours

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Intervention and comparator: In the intervention group, the dose of the drug is a vial containing 4 ml, equivalent to 100 mg, which is prescribed for an adult weighing about 70 kg each time, and if the patient's weight is much lower or higher, it will be adjusted accordingly. Surfactant is prescribed inside the trachea in two doses, starting on the day of intubation with a second dose 6 hours later. The control group will receive the same volume of normal saline, based on weight, administered into the trachea with the same time schedule.

Main outcomes: 30 days mortality; patient mortality during stay in ICU up to 30 days; ICU length of stay up to 30 days; Time under mechanical ventilation up to 30 days.

Randomisation: After the participant enters the study, i.e. after the qualification of the patients in the trial is confirmed and their informed written consent is taken, we will use a simple randomisation method using a table of random numbers. In order to hide the random allocation process, a central randomisation approach will be used and the random sequence will be at the disposal of one of the researchers, excluding the principal investigator.

Blinding (masking): Participants, healthcare providers and the principal investigator assessing the outcomes will all be blinded to the group assignment.

Numbers to be randomised (sample size): A total of 60 participants will be randomised in a 1:1 allocation ratio (30 patients allocated to the intervention group and 30 patients allocated to the control group).

Trial Status: The protocol is Version 1.0, May 31, 2020. Recruitment began July 30, 2020, and is anticipated to be completed by October 30, 2020.

Trial registration: IRCT registration number: IRCT20091201002804N12
Registration date: 1st June 2020, 1399/03/12

Full protocol: The full protocol is attached as an additional file, accessible from the Trials website (Additional file 1). In the interest in expediting dissemination of this material, the familiar formatting has been eliminated; this Letter serves as a summary of the key elements of the full protocol.

Keywords: COVID-19, SARS-COV-2, surfactant, ICU, acute respiratory distress syndrome, ventilator, mechanical ventilation; mortality; hospital length of stay; hospital discharge rate Randomised controlled trial, protocol

Supplementary Information

Supplementary information accompanies this paper at https://doi.org/10.1186/s13063-020-04815-z.

Additional file 1.

Acknowledgements

The authors would like to acknowledge the kind cooperation of Anesthesiology Research Center, SBMU, Iran for their support. Also, the kind cooperation of the clinical and administrative parts of Taleghani Hospital and Modarres Hospital, both in SBMU, Tehran, Iran is highly acknowledged. In addition, the kind help of Dr Amini Pouya and Dr Rabiei are highly appreciated.

Authors' contributions

AD and SR conceived of the study. AD, SR, MG, MF, NM, ST, KF, NN, NMA, SB initiated the study design. AD, MG, MF, ST, KF, NN, SB, ANA, AP and MAKK helped with implementation. AD is the grant holder. AD, SR and NM provided statistical expertise in clinical trial design and NM is conducting the primary statistical analysis. All authors contributed to refinement of the study protocol and approved the final manuscript."

Funding

This research project is funded by the Anesthesiology Research Center, SBMU, Tehran, Iran with grant number 22959. Besides, support was provided solely from institutional and/or departmental sources. The funding body only has an "observation role" in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript.
The surfactant vials would be provided by Tekzima Drug Alborz Company, Tehran, Iran which provided the drugs as a support to the study. The drug was provided as "Beraksurf" as 100 mg in 4 mL vials. Except for the drugs, there is no relationship between the researchers and the latter company or any other company.

Availability of data and materials

The corresponding author has access to the final dataset of the trial, and the data will be available on reasonable request (Contact: alidabbagh@yahoo.com).

Ethics approval and consent to participate

Name of ethics committee: Shahid Beheshti University of Medical Sciences, Tehran, Iran.
Ethics committee reference number: IR.SBMU.RETECH.REC.1399.016; Approval date: 2020-03-28, 1399/01/09
I certify that this trial has received ethical approval from the aforementioned ethical committee. In addition, we intend to obtain consent from participants to participate in the study (or from their parent or legal guardian in the case of children under 16).

Consent for publication

Not applicable.

Competing interests

The surfactant vials were provided by Tekzima Drug Alborz Company, Tehran, Iran which provided the drugs as a support to the study. The drug was provided as "Beraksurf" as 100 mg in 4 mL vials. Except for the supply of the drugs, there is no relationship between the researchers and the latter company or any other company.

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Received: 14 October 2020 Accepted: 16 October 2020
Published online: 11 November 2020

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