Clinical Trial Protocol
Iranian Registry of Clinical Trials

17 Sep 2026

Effect of prophylactic caffeine on the sleep/wake cycles (SWC) in preterm neonates with RDS treated with nasal CPAP with a gestational age of 28-35 weeks.

Protocol summary

Study aim

We will investigate the effect of caffeine on the sleep-wake cycle (SWC) in neonates with gestational age of 28-35 weeks with respiratory distress syndrome (RDS} requiring nasal CPAP (nCPAP) by using amplitude-integrated EEG (aEEG).

Design

This study is a single blinded interventional randomized controlled clinical trial phase 3 with two parallel groups (17 neonates in each group). They will randomly allocate by permutation random block method with blocks of 4 in two groups of caffeine treatment (F) and control group (C).

Settings and conduct

The study will be conducted in the neonatal intensive care unit at shahid-beheshti hospital in Isfahan, Iran. The eligible infants randomly assigned to caffeine and control groups since birth. After 48 hours of birth, the sleep-wake cycles of neonates in both groups will be monitored by aEEG for 24 hours.

Participants/Inclusion and exclusion criteria

Inclusion criteria include neonates with gestational age of 28-35 weeks and spontaneous breathing who are under nCPAP support due to RDS. Exclusion criteria are infants who have perinatal asphyxia; congenital brain anomalies; evidence of Patent Ductus Arteriosus (PDA) in echocardiography; evidence of intraventricular Hemorrhage (IVH) grade III oIV in cranial ultrasonography; existence of air leak; tachycardia (HR more than 180 beat/min) during study and neonates who do not need nCPAP after 48 hour of birth.

Intervention groups

The eligible infants will be randomly assigned into two groups of caffeine (F) or control (C). Infants in the F group received 20 mg/kg caffeine as the initial dose since birth, and then it will continue with 10 mg/kg daily as the maintenance dose until discontinuation of nCPAP and oxygen administration. Infants in the C group will not receive any placebo or similar drugs.

Main outcome variables

The effect of caffeine on the number and duration of sleep-wake cycle of neonate.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20170627034782N3**
Registration date: **2022-07-06, 1401/04/15**
Registration timing: **prospective**

Last update: **2022-07-06, 1401/04/15**
Update count: **0**

Registration date

2022-07-06, 1401/04/15

Registrant information

Name

Ramin Iranpour

Name of organization / entity

Isfahan University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

+98 31 3386 8247

Email address

iranpour@med.mui.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-09-23, 1401/07/01

Expected recruitment end date

2023-03-20, 1401/12/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of prophylactic caffeine on the sleep/wake cycles (SWC) in preterm neonates with RDS treated with nasal CPAP with a gestational age of 28-35 weeks.

Public title

Effect of prophylactic caffeine on the sleep/wake cycles (SWC) in preterm neonates.

Purpose

Diagnostic

Inclusion/Exclusion criteria

Inclusion criteria:

Preterm neonate with a gestational age of 28-35 weeks, Spontaneous breathing with clinical sign and symptom of RDS requiring nasal CPAP.

Exclusion criteria:

Perinatal Asphyxia (apgar score fifth minute=0-3, umbilical cord PH<7, umbilical cord bicarbonate <12 meq/l), Evidence of PDA which is confirmed by echocardiography, Evidence of IVH (grade 3-4) which is confirmed by cranial sonography, Existence of air leakage, Neonate with congenital brain anomaly, Neonate with tachycardia (heart rate >180), Neonate not requiring nasal CPAP till 48 hours after birth.

Age

From **1 day** old to **1 day** old

Gender

Both

Phase

3

Groups that have been masked

- Participant

Sample size

Target sample size: **34**

Randomization (investigator's opinion)

Randomized

Randomization description

The study sample was randomly allocated by permutation random block method with blocks of 4 in two groups of caffeine treatment (F) and control group (C).

Blinding (investigator's opinion)

Single blinded

Blinding description

Only neonates participating in the study are not aware of the drug prescription.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Isfahan University of Medical Sciences, Isfahan, Iran

Street address

Research deputy, Isfahan University of Medical Sciences, Hezarjerib Blvd.

City

Isfahan

Province

Isfehan

Postal code

8184757851

Approval date

2022-07-02, 1401/04/11

Ethics committee reference number

IR.MUI.MED.REC.1401.145

Health conditions studied

1

Description of health condition studied

The effect of caffeine in quantity and quality of sleep/wake cycle in newborns by using of aEEG

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

The number of sleep-wake cycle during of one 24 hour

Timepoint

From 48 hours after birth till 24 hour later continuously.

Method of measurement

Brain monitoring with amplitude Electroencephalography (aEEG)

Secondary outcomes

1

Description

apnea of prematurity

Timepoint

24 hour cardio-respiratory monitoring

Method of measurement

pulse oximeter with Spo2 continuous monitoring

2

Description

The mean duration of active phase of sleep

Timepoint

From 48 hours after birth till 24 hour later continuously.

Method of measurement

Brain monitoring with amplitude Electroencephalography (aEEG).

3

Description

The mean duration of quiet phase of sleep.

Timepoint

From 48 hours after birth till 24 hour later continuously.

Method of measurement

Brain monitoring with amplitude Electroencephalography (aEEG).

4

Description

The mean heart rate.

Timepoint

Every 6 hour, since birth till 72 hour after birth

Method of measurement

Cardio-respiratory monitoring by pulse oximeter.

5

Description

The mean arterial oxygen saturation.

Timepoint

Every 6 hour, since birth till 72 hour after birth

Method of measurement

Every 6 hour, since birth till 72 hour after birth

6

Description

chronic lung disease

Timepoint

Daily

Method of measurement

Physical exam and chest xray

Intervention groups

1

Description

Intervention group: In the caffeine group (F), the premature neonates with a gestational age of 28- 35 weeks with RDS and requiring nCPAP will be receive 20 mg/kg caffeine as the initial dose since birth, and then it will continue with 10 mg/kg daily as the maintenance dose until discontinuation of nCPAP and oxygen administration. After 48 hours of birth, the sleep-wake cycles of neonates will be monitored by aEEG for 24 hours.

Category

Diagnosis

2

Description

Control group: In the control group (C), the premature neonates with a gestational age of 28- 35 weeks with RDS and requiring nCPAP will be will not receive any placebo or similar drugs. After 48 hours of birth, the sleep-wake cycles of neonates will be monitored by aEEG for 24 hours.

Category

Diagnosis

Recruitment centers

1

Recruitment center

Name of recruitment center

shahid-Beheshti Hospital, Isfahan

Full name of responsible person

Ramin Iranpour

Street address

No.16, Sout Resalat St., Mardavij Ave.

City

Isfahan

Province

Isfehan

Postal code

8168967893

Phone

+98 913 113 1653

Email

iranpour@med.mui.ac.ir

Web page address

https://mui.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Esfahan University of Medical Sciences

Full name of responsible person

Ḍr Mansour Siavash Dastjerdi

Street address

Hezar-jerib street, Isfahan University of Medical Sciences, Deputy of research and technologyBuilding number 4,

City

Isfahan

Province

Isfehan

Postal code

8174673461

Phone

+98 31 3668 7898

Fax

+98 31 3668 8138

Email

research@mui.ac.ir

Web page address

http://research.mui.ac.ir/

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

Esfahan 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

Esfahan University of Medical Sciences

Full name of responsible person

Dr Ramin Iranpour

Position

Neonatologist/Associate Professor

Latest degree

Subspecialist

Other areas of specialty/work

Pediatrics

Street address

Mardavij avenue, Resalat Jonobi, Number16

City

Isfahan

Province

Isfehan

Postal code

8168967893

Phone

+98 31 3668 1555

Fax

Email

iranpour@med.mui.ac.ir

Web page address

http://mui.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity

Esfahan University of Medical Sciences

Full name of responsible person

Dr Ramin Iranpour

Position

Neonatologist/Associate Professor

Latest degree

Subspecialist

Other areas of specialty/work

Pediatrics

Street address

Mardavij avenue, Resalat Jonobi, Number16

City

Isfahan

Province

Isfehan

Postal code

8168967893

Phone

+98 31 3668 1555

Fax

Email

iranpour@med.mui.ac.ir

Web page address

http://mui.ac.ir

Person responsible for updating data

Contact

Name of organization / entity

Esfahan University of Medical Sciences

Full name of responsible person

Ramin Iranpour

Position

Associate professor of Pediaitrics in Isfahan Medical Faculty

Latest degree

Subspecialist

Other areas of specialty/work

Pediatrics

Street address

No. 16, Sout Resalat St, Mardavij Ave

City

Isfahan

Province

Isfehan

Postal code

8168967893

Phone

+98 31 3668 1555

Email

ramin.iranpour@gmail.com

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

There is no further information.

Study Protocol

No - There is not 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