Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

Evaluation of Melatonin efficacy in prophylaxis of Doxorubicin induced cardiotoxicity in patients with breast cancer and receiving the Doxorubicin-Cyclophosphamide regimen : Double-blind randomized clinical trial

Protocol summary

Study aim
Evaluation of the effectiveness of melatonin in preventing doxorubicin-induced cardiac toxicity in patients with breast cancer receiving AC regimen

Design
The clinical trial has a control group with parallel groups that is performed in two blind, randomized, phase 3 and on 58 patients. Block randomization method is used for randomization.

Settings and conduct
This study was performed at the Imam Khomeini Hospital Cancer Institute, Tehran University of Medical Sciences, with the aim of investigating the possibility of prescribing Melatonin to prevent the occurrence of doxorubicin-induced cardiac toxicity in breast cancer patients and on 58 patients who are in two groups. Patients in the two groups are compared in terms of criteria including: blood levels of cardiac biomarkers and echocardiographic results.

Participants/Inclusion and exclusion criteria
- People who have recently been definitively diagnosed with breast cancer and are candidates for a chemotherapy regimen containing doxorubicin

Intervention groups
Patients are divided into two groups. In the first group, Melatonin is prescribed with a chemotherapy regimen and in the second group, the same chemotherapy regimen is prescribed with a Placebo.

Main outcome variables
- Echocardiographic variables including: EF and GLS - Cardiac biomarkers including troponin and CK-MB

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20211109053025N1**
Registration date: **2022-01-07, 1400/10/17**
Registration timing: **registered_while_recruiting**

Last update: **2022-01-07, 1400/10/17**
Update count: **0**

Registration date
2022-01-07, 1400/10/17

Registrant information

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Seyed Mohamad Mousavinia

Name of organization / entity

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2021-11-22, 1400/09/01

Expected recruitment end date
2022-08-22, 1401/05/31

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Evaluation of Melatonin efficacy in prophylaxis of

Doxorubicin induced cardiotoxicity in patients with breast cancer and receiving the Doxorubicin-Cyclophosphamide regimen : Double-blind randomized clinical trial

Public title

Evaluation of Melatonin efficacy in prophylaxis of Doxorubicin induced cardiotoxicity in patients with breast cancer and receiving the Doxorubicin-Cyclophosphamide regimen

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

People who have recently been definitively diagnosed with breast cancer and are candidates for a chemotherapy regimen containing doxorubicin Having the consent to participate in the study Age over 18 years Ability to consume orally Normal liver function (serum bilirubin less than 1.5 mg / dl) No CKD or SrCreatinine> 2 mg / dL or eGFR <30 mL / min / m2

Exclusion criteria:

Patients with a history of breast cancer or a history of chemotherapy drugs that cause cardiotoxicity Patients who are unable to receive doxorubicin for any reason Patient with LVEF <50% before starting treatment Use of ACE inhibitors, ARBs, beta-blockers or in the treatment of heart failure Having coronary or valvular heart disease, cardiomyopathy, hypertension or AF History of receiving chest radiotherapy Patients with neurological injuries such as Parkinson's, stroke, seizures, etc. Those who are taking an antioxidant drug such as vitamin E, NAC, etc. Participate in other clinical studies simultaneously Known sensitivity to any of the consumables in the study

Age

From **18 years** old

Gender

Both

Phase

3

Groups that have been masked

- Participant
- Care provider
- Data and Safety Monitoring Board

Sample size

Target sample size: **56**

Randomization (investigator's opinion)

Randomized

Randomization description

Patients are randomly assigned to the study using block randomization in two groups receiving placebo chemotherapy regimen or melatonin chemotherapy regimen group. For this purpose, the patient and the researcher (student) and the doctors will be blind and the randomization operation will be performed by the executor of the project based on double or quadruple random tables and on each box, a number will be registered, the contents of which will be unknown, and in this way it will be given to the researcher and then the patient.

Blinding (investigator's opinion)

Double blinded

Blinding description

Participants in the study, the physician who introduced them to the research team, the cardiologist who is responsible for measuring echocardiographic parameters in patients in both groups, and the laboratory staff who are responsible for measuring cardiac biomarkers in patients, the student who, as a researcher, makes the arrangements are blinded in this study. Using block randomization method which is done by the executor of the project and using two or four tables, each box containing the medicine or placebo is randomly assigned a number and that number is given to the researcher and the patient.

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

The Institute of Pharmaceutical Sciences (TIPS) of the Tehran University of Medical Sciences

Street address

Poursina Avenue, Tehran University of Medical Sciences, Faculty of Pharmacy, The Institute of Pharmaceutical Sciences (TIPS), PO Box. 14176-13151, Iran

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Province

Tehran

Postal code

14176-13151

Approval date

2021-12-25, 1400/10/04

Ethics committee reference number

IR.TUMS.TIPS.REC.1400.19

Health conditions studied

1

Description of health condition studied

Breast cancer

ICD-10 code

C50

ICD-10 code description

Malignant neoplasm of breast

2

Description of health condition studied

drug-induced cardiomyopathy

ICD-10 code

142.7

ICD-10 code description

cardiomyopathy due to drug and external agent

Primary outcomes

1

Description

LVEF (Left ventricular ejection fraction) : The left ventricular drain fraction or the amount of blood pumped from the left ventricle with each contraction.

Timepoint

Once at the beginning and once a week after the last chemotherapy session

Method of measurement

Using echocardiography performed by a cardiologist

Secondary outcomes

1

Description

GLS (Global longitudinal strain): A sensitive criterion used by echocardiography to measure myocardial deformity and left ventricular contractile strength and can aid in the early diagnosis of cardiotoxicity. A decrease of more than 15% compared to the beginning or an absolute value of -19% after the start of anthracyclines is associated with a significant increase in the risk of future LVEF reduction.

Timepoint

At the beginning and one week after the last chemotherapy session

Method of measurement

Echocardiography by a cardiologist

2

Description

Troponin I: One of the three types of troponin present in the body that is more specific to the myocardium of the heart and as a marker of the heart, can help diagnose myocardial damage. This enzyme increases within a few hours after heart damage and can last for a long time. Remain in my head for 10-14 days.

Timepoint

Once at the beginning and twice at one week after the second and last session of chemotherapy

Method of measurement

Blood sampling and blood level measurement by laboratory

3

Description

CK-MB: Creatine kinase and its MB isoenzyme are among the serological tests used to diagnose heart damage. This biomarker rises within the first 4 to 6 hours after heart injury and returns to baseline after 36 to 48 hours.

Timepoint

Once at the beginning and twice at one week after the second and last session of chemotherapy.

Method of measurement

Blood sampling and blood level measurement by laboratory

4

Description

PSQI Score: The Pittsburgh Sleep Quality Index Questionnaire examines people's attitudes about sleep quality over the past four weeks. It has 7 components and each component gets a score from zero to three. The overall score is from zero to 21 and is obtained from the sum of the scores of the components. An overall score of 5 or higher indicates poor sleep quality.

Timepoint

At the beginning, a month later and at the end of chemotherapy

Method of measurement

Using the PSQI questionnaire

5

Description

ISI (Insomnia severity index) score: The index indicates the severity of insomnia, which includes 5 questions with intensity and scores from zero to 4. In the end, based on the overall score, which is from zero to 28, the severity of insomnia is determined.

Timepoint

At the beginning, a month later and at the end of chemotherapy

Method of measurement

ISI questionnaire

6

Description

HADS (Hospital Anxiety and Depression Scale) Score: A clinical scale for anxiety and depression that includes 14 questions. The score of the individual questions is the index of anxiety and the couple questions are the index of depression. The total score varies from zero to 21 and based on that, the person is defined as normal or abnormal.

Timepoint

At the beginning, a month later and at the end of chemotherapy

Method of measurement

HADS questionnaire

7

Description

EORTC score QLQ-c30: is a quality of life questionnaire in cancer patients that has been done in Persian for reliability and validity. Each question receives a score from 1 to 4 and is finally determined based on the total score of quality of life .

Timepoint

First, one month later and end of the study

Method of measurement
Score from the questionnaire

Intervention groups

1

Description
Intervention group: A group in which patients receive melatonin drug produced by Jalinous at a dose of 10 mg once in the evening along with chemotherapy. The patient will receive this drug from the first day of chemotherapy until one week after the last session. The duration of medication will be 49 or 70 days, depending on the patient's chemotherapy regimen.
Category
Prevention

2

Description
Control group: A group in which patients receive Placebo produced by Jalinous once in the evening along with chemotherapy. The patient will receive placebo from the first day of chemotherapy until one week after the last session. The duration of medication will be 49 or 70 days, depending on the patient's chemotherapy regimen.
Category
Placebo

Recruitment centers

1

Recruitment center
Name of recruitment center
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Sponsors / Funding sources

1

Sponsor
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Email
vcr@tums.ac.ir
Grant name
Grant code / Reference number
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
Seyed Mohamad Mousavinia
Position
Resident
Latest degree
Medical doctor
Other areas of specialty/work
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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
it is not necessary
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
Yes - There is a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
Not applicable
Title and more details about the data/document
Final proposal report
When the data will become available and for how long
one year
To whom data/document is available
Researchers
Under which criteria data/document could be used
For other researchers to use the results of the data
From where data/document is obtainable
To the main executor of the project
What processes are involved for a request to access data/document
Send email to the main executor of the project
Comments