Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

A randomized controlled trial comparing the effects of β-D-Mannuronic acid and immunosuppressive drugs on disease activity and inflammatory markers in patients with Rheumatoid Arthritis

Protocol summary

Summary

Following to get an official approval for assessment of therapeutic effect of β-D-Mannuronic acid on Ankylosing Spondylitis with the Irct registration number : IRCT2013062213739N1 at the level of Clinical Trial Phase I from Ministry of Iranian Health and Medical Education, a Clinical Trial of this drug was designed in patients with Rheumatoid Arthritis. The aim of this study is to assess the safety and effectiveness of β-D Mannuronic acid in patients with Rheumatoid Arthritis. β-D-Mannuronic acid an anti-inflammatory agent that belongs to the family of nonsteroidal anti-inflammatory drugs. This drug has shown therapeutic effects with the greatest tolerability and safety in various experimental models such as experimental model of MS, rheumatoid arthritis, nephrotic syndrome and acute glomerulonephritis. In this randomized, controlled trial, thirty five patients with Rheumatoid Arthritis fulfilling the American College of Rheumatology Diagnostic Criteria that have active disease will be examined. Additionally, patients do not have other concomitant diseases (Hepatic, renal and cardiovascular) or malignancies. Written informed consent will be obtained. Patients will be randomly assigned to receive either β-D Mannuronic acid (treatment group, 25 patients) 1500 mg/day (three 500 mg tablets/day) or immunosuppressive drugs (control group, 10 patients) orally for 12 weeks. Medical history, clinical parameters , serum level of CRP, ESR, RF,Anti CCP and also the frequencies of circulating Th17 cells and regulatory T cells, L- selectin expression and leukocyte function-associated antigen-1 (LFA-1) expression will be evaluated at baseline and 12 weeks after treatment.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2014011213739N2**
Registration date: **2014-05-16, 1393/02/26**
Registration timing: **prospective**

Last update:
Update count: **0**

Registration date

2014-05-16, 1393/02/26

Registrant information

Name
Abbas Mirshafiey
Name of organization / entity
Tehran University of Medical Sciences
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Recruitment status

Recruitment complete

Funding source

Vice-Chancellor for Research, Tehran University of Medical Sciences and Rheumatology Research Center, Tehran University of Medical Sciences

Expected recruitment start date

2014-07-20, 1393/04/29

Expected recruitment end date

2015-07-20, 1394/04/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title
A randomized controlled trial comparing the effects of β-D-Mannuronic acid and immunosuppressive drugs on disease activity and inflammatory markers in patients with Rheumatoid Arthritis

Public title
The therapeutic effects of β-D-Mannuronic acid in patients with Rheumatoid Arthritis

Purpose
Basic scienece

Inclusion/Exclusion criteria
Inclusion Criteria: 25-60 years old patients diagnosed with RA according to American College of Rheumatology Diagnostic Criteria after the initial visit by a specialist in rheumatology and parameters ESR, RF, CRP and Anti-CCP elected. Also each patient must sign written informed consent. Exclusion Criteria: History of fever and infectious diseases, positive pregnancy test or lactation, other collagen- vascular diseases, other auto-immune diseases, malignancies, patients have enrolled another Clinical Trial study within last 4 weeks, other concomitant diseases (Hepatic, renal, haematological, gastrointestinal, endocrine, cardiovascular, pulmonary, neurological or cerebral disease)

Age
From **25 years** old to **60 years** old

Gender
Both

Phase
1-2

Groups that have been masked
No information

Sample size
Target sample size: **35**

Randomization (investigator's opinion)
Randomized

Randomization description

Blinding (investigator's opinion)
Double blinded

Blinding description

Placebo
Not used

Assignment
Parallel

Other design features
1- In this study the patients and outcomes assessor do not know which β-D Mannuronic acid or immunosuppressive drugs is being given (double-blind). 2- In this study randomization will be performed by stratified randomization method. 3- β-D Mannuronic acid was extracted from Alginic acid sodium salt (Sigma, A2033-1Kg) as a reference sample. This extraction method is a modified procedure of acid hydrolysis method (Chhatbar et al. 2009) that is being performed in Department of Pathobiology, Division of Immunology , School of Public Health, Tehran University of Medical Sciences.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics Committee of Tehran University of Medical Sciences

Street address
6th floor, Headquarter for Tehran University of Medical Sciences, on the corner of Keshavarz Blvd. And Qods Street, Keshavarz Blvd., Tehran, Iran.

City
Tehran

Postal code

Approval date
2014-01-15, 1392/10/25

Ethics committee reference number
130/2392/92/د

Health conditions studied

1

Description of health condition studied
Rheumatoid Arthritis

ICD-10 code
M05

ICD-10 code description
Seropositive Rheumatoid Arthritis

Primary outcomes

1

Description
Severity of disease

Timepoint
At baseline and after 12 weeks of treatment

Method of measurement
Taking history and Questionnaire

2

Description
Morning stiffness

Timepoint
At baseline and after 12 weeks of treatment

Method of measurement
Taking history and Questionnaire

3

Description
The number of swollen joints

Timepoint
At baseline and after 12 weeks of treatment

Method of measurement
Examination

4

Description
Pain
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Examination

Secondary outcomes

1

Description
Serum level of CRP
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Turbidometry

2

Description
The frequency of circulating Th17 cells
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Flow cytometry

3

Description
The frequency of circulating regulatory T (Treg) cells
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Flow cytometry

4

Description
L- selectin expression
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Flow cytometry

5

Description
LFA-1 expression
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Real-time PCR

6

Description
Serum level of IL-6
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Elisa

7

Description
Serum level of IL-10
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Elisa

8

Description
Serum level of IL-17A
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Elisa

9

Description
Serum level of TNF-α
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Elisa

10

Description
Erythrocyte Sedimentation Rate (ESR)
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Millimeters per hour

11

Description
Anti-cyclic Citrullinated Peptide (anti-CCP) Antibodies
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Serological tests

12

Description
Rheumatoid factor (RF)
Timepoint
At baseline and after 12 weeks of treatment
Method of measurement
Serological tests

Intervention groups

1

Description
Treatment group will receive 1500 mg/day (three 500 mg tablets/day) of β-D Mannuronic acid orally for 12 weeks.

Category
Treatment - Drugs

2

Description
Control group will receive immunosuppressive drugs orally for 12 weeks
Category
Treatment - Drugs

Recruitment centers

1

Recruitment center
Name of recruitment center
Rheumatology Research Center, Tehran University of Medical Sciences
Full name of responsible person
Dr. Mahdi Mahmoudi (PhD- Assistant Professor)
Street address
Rheumatology Research Center, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran
City
Tehran

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Vice-Chancellor for Research, Tehran University of Medical Sciences
Full name of responsible person
Dr. Masood Younesian (MD, PhD, Vice-Chancellor for Research, Tehran University of Medical Sciences)
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6th floor, Headquarter for Tehran University of Medical Sciences, on the corner of Keshavarz Blvd. And Qods Street, Keshavarz Blvd. Tehran, Iran.
City
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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
Vice-Chancellor for Research, Tehran University of Medical Sciences
Proportion provided by this source
Public or private sector
empty
Domestic or foreign origin
empty
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
empty

2

Sponsor
Name of organization / entity
Rheumatology Research Center, Tehran University of Medical Sciences
Full name of responsible person
Dr. Farhad Gharibdoost(MD, Professor)
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Rheumatology Research Center, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran
City
Tehran
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Rheumatology Research Center, Tehran University of Medical Sciences
Proportion provided by this source
Public or private sector
empty
Domestic or foreign origin
empty
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
empty

Person responsible for general inquiries

Contact
Name of organization / entity
Department of Pathobiology, School of Public Health, Tehran University of Medical Sciences
Full name of responsible person
Dr. Abbas Mirshafiey
Position
Head of the Department of Pathobiology (PhD - Professor)
Other areas of specialty/work
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Position

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Web page address

Person responsible for updating data

Contact

Sharing plan

Deidentified Individual Participant Data Set (IPD)

empty

Study Protocol

empty

Statistical Analysis Plan

empty

Informed Consent Form

empty

Clinical Study Report

empty

Analytic Code

empty

Data Dictionary

empty