

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

A randomized controlled trial comparing the effects of β -D-Mannuronic acid and conventional Non-steroidal anti-inflammatory drugs on disease activity and inflammatory markers in patients with ankylosing spondylitis

Protocol summary

Summary

The aim of this study is to assess the safety and effectiveness of β -D mannuronic acid in patients with Ankylosing spondylitis. β -D mannuronic acid has shown therapeutic effects with the greatest tolerability and safety in various experimental models such as experimental autoimmune encephalitis, adjuvant induced arthritis, nephrotic syndrome and acute glomerulonephritis. In this randomized, controlled trial, thirty five patients with Ankylosing spondylitis fulfilling the modified New York criteria that have active disease (BASDAI score ≥ 4 and BASFI score ≥ 4) 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 conventional Non-steroidal anti-inflammatory drugs (control group, 10 patients) orally for 12 weeks. Medical history, physical examinations, BASDAI and BASFI scores, serum level of CRP, 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: **IRCT2013062213739N1**

Registration date: **2013-12-30, 1392/10/09**

Registration timing: **prospective**

Last update:

Update count: **0**

Registration date

2013-12-30, 1392/10/09

Registrant information

Name

Abbas Mirshafiey

Name of organization / entity

Tehran University of Medical Sciences

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Recruitment status

Recruitment complete

Funding source

1- Vice-Chancellor for Research, Tehran University of Medical Sciences
2- Rheumatology research center, Tehran University of Medical Sciences
3- Research Center for Immunodeficiencies, Children's Medical Center, Tehran University of Medical Sciences

Expected recruitment start date

2014-04-20, 1393/01/31

Expected recruitment end date

2015-04-20, 1394/01/31

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 conventional Non-steroidal anti-inflammatory drugs on disease activity and inflammatory markers in patients with ankylosing spondylitis

Public title

The therapeutic effects of β -D-Mannuronic acid in patients with ankylosing spondylitis

Purpose

Basic science

Inclusion/Exclusion criteria

Inclusion Criteria: Patients age 18-45 years old, Diagnosis of "Definite AS" as defined by the modified New York criteria, Disease activity equal to BASDAI score ≥ 4 , Functional activity equal to BASFI score ≥ 4 , 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 **18 years** old to **45 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 conventional Non-steroidal anti-inflammatory 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 Immunology division of Department of pathobiology, 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**

2013-10-12, 1392/07/20

Ethics committee reference number

130.1525.92.ص

Health conditions studied**1****Description of health condition studied**

Ankylosing spondylitis

ICD-10 code

M45

ICD-10 code description

Ankylosing spondylitis

Primary outcomes**1****Description**

The ASAS20 response criteria

Timepoint

12 weeks after intervention (at the end of study)

Method of measurement

Questionnaire

2**Description**

Disease activity

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Questionnaire

3**Description**

Physical function

Timepoint

At baseline and after 12 weeks of treatment.

Method of measurement

Questionnaire

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

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 conventional Non-steroidal anti-inflammatory 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.

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Tehran
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
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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
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

3

Sponsor
Name of organization / entity
Research Center for Immunodeficiencies, Tehran University of Medical Sciences
Full name of responsible person
Dr. Asghar Agha Mohammadi (MD, Professor)
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Research Center for Immunodeficiencies, Children's Medical Center, Tehran University of Medical

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Tehran
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Research Center for Immunodeficiencies, 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
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Head of the Department of pathobiology (PHD - Professor)
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Person responsible for scientific inquiries

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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