Clinical Trial Protocol
Iranian Registry of Clinical Trials

14 Oct 2026

Evaluation of efficacy and safety of Zytux™ (Rituximab) in refractory myasthenia gravis patients

Protocol summary

Study aim
Evaluation of efficacy and safety of Zytux™ (Rituximab) in refractory myasthenia gravis patients

Design
This phase 4 prospective, single-arm, open-label, pre-post clinical trial study will be conducted in 30 patients with refractory myasthenia gravis.

Settings and conduct
This multi-center study will be conducted in patients with refractory myasthenia gravis in six different cities of Iran with a follow-up duration of 48 weeks. Zytux™ (Rituximab) will be administered to the eligible patients 2 times at day 0 and 15, followed by one single injection 6 months later. The outcomes will be assessed and recorded by a physician through 48 weeks of monitoring of the patients.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Generalized Non-Thymothamous myasthenia gravis patients, Not having previous treatment with rituximab, Refractory to standard treatment or contraindicated including corticosteroid or Azathioprine, Age between 18 and 80 years Exclusion criteria: Pregnancy, Planning for pregnancy in the following year, Lactation, Active infection, HBsAg+ OR HBV DNA Positive, Prior malignancy, Hypersensitivity reactions or anaphylactic shock to rituximab, Major renal disease, Major Hepatic disease, Cardiac Arrhythmia history, Occular myasthenia gravis, Thymomathous myasthenia gravis, Major Psychiatric disease, Doing Thymectomy

Intervention groups
The therapeutic schema is rituximab 1000 mg, 2 times at day 0 and 15, followed by one single injection (1000 mg) 6 months later. However, rituximab infusion will be administered sooner if myasthenic symptoms reappear and interfere with daily life activities of patient (the interval between Rituximab infusions should be at least three months).

Main outcome variables
Changes in the mean dose of corticosteroid used by patients

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20150303021315N18**
Registration date: **2020-05-23, 1399/03/03**
Registration timing: **registered_while_recruiting**

Last update: **2020-05-23, 1399/03/03**
Update count: **0**

Registration date
2020-05-23, 1399/03/03

Registrant information

Name
Nassim Anjidani

Name of organization / entity
Orchid Pharmed

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2020-02-11, 1398/11/22

Expected recruitment end date
2021-02-10, 1399/11/22

Actual recruitment start date
empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Evaluation of efficacy and safety of Zytux™ (Rituximab) in refractory myasthenia gravis patients

Public title

Evaluation of efficacy and safety of Zytux™ (Rituximab) in refractory myasthenia gravis patients

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Generalized Non-Thymothamous patients with myasthenia gravis patients including MuSK Antibody positive, AChR Antibody positive, and Seronegative myasthenia gravis patients. Not having previous treatment with rituximab. Refractory to standard treatment or contraindicated including Corticosteroid dependency (taking at least 2 months of 1mg/kg corticosteroid medications and has not responded properly, or being stable with steroid therapy, but during tapering down the medication up to 30 mg alternative or 15 mg daily, has experienced a relapse of the disease); Having contraindication of corticosteroid therapy; Not responder to Azathioprine (2-3 mg/kg) therapy for at least 9 months of taking the medication or because of occurrence of adverse effects of Azathioprine the medication has been stopped. Aged greater or equal to 18, and lesser or equal to 80.

Exclusion criteria:

Pregnancy Planning for pregnancy in the following year Lactation Active infection HBsAg+ OR HBV DNA Positive Prior malignancy Hypersensitivity reactions or anaphylactic shock to rituximab Major renal disease Major Hepatic disease Cardiac Arrhythmia history Occular myasthenia gravis Thymomathous myasthenia gravis Major Psychiatric disease Doing Thymectomy

Age

From **18 years** old to **80 years** old

Gender

Both

Phase

4

Groups that have been masked

No information

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

N/A

Randomization description

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Single

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Tehran University of Medical Sciences

Street address

No. 23, 16th Azar Ave., Keshavarz Blvd.

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1417863181

Approval date

2020-02-11, 1398/11/22

Ethics committee reference number

IR.TUMS.MEDICINE.REC.1398.879

Health conditions studied

1

Description of health condition studied

Myasthenia gravis

ICD-10 code

G70

ICD-10 code description

Myasthenia gravis and other myoneural disorders

Primary outcomes

1

Description

Changes in the mean dose of corticosteroid used by patients

Timepoint

day 0, day 15, week 12, week 24, week 36, week 48

Method of measurement

Patient’s concomitant medication

Secondary outcomes

1

Description

Safety of Zytux™ (Rituximab) in refractory myasthenia gravis patients

Timepoint

day 0, day 15, week 12, week 24, week 36, week 48

Method of measurement

Physical Examination

2

Description
Time to relapse from the onset of treatment
Timepoint
day 0, day 15, week 12, week 24, week 36, week 48
Method of measurement
Physical Examination

3

Description
Changes in AChR and MuSK antibody levels
Timepoint
day 0 and week 48
Method of measurement
The Serum titer of AChR and MuSK antibodies

4

Description
Changes in the mean dose of pyridostigmine used by patients
Timepoint
day 0, day 15, week 12, week 24, week 36, week 48
Method of measurement
Patient’s concomitant drugs during treatment

5

Description
Changes in CD19 and CD20 levels
Timepoint
week 7, week 24
Method of measurement
Flow Cytometry

Intervention groups

1

Description
The therapeutic process consists of two cycles. In cycle 1, Zytux™ 1000 mg (Aryogen-Pharmed Rituximab concentrated solution of 10mg/ml made for infusion) will be administered 2 times at day 0 and 15 and one single infusion (1000 mg) 6 months later in cycle 2. However, Zytux™ will be administered sooner if myasthenic symptoms reappear and interfere with the daily life activities of the patient (the interval between Zytux™ infusions should be at least three months).
Category
Treatment - Drugs

Recruitment centers

1

Recruitment center
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Sponsors / Funding sources

1

Sponsor
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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
AryoGen Pharmed Co.
Proportion provided by this source
100
Public or private sector
Private
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Industry

Person responsible for general inquiries

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available
Study Protocol
Undecided - It is not yet known if there will be 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