

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Effect of low copper diet and penicillamine combination on VEGF, IL-6, IL-8, TNF $\alpha$ and Karnovski performance score in high grade brain glioma after Gamma Knife Radiosurgery in Iran Gamma Knife Center

#### Protocol summary

##### Summary

The average survival rate of patients with malignant brain gliomas(GBM) is about 6-11months and this study was designed to find a new way to treat these patients. Copper ion is essential cofactor of angiogenesis and its lead to proliferation of endothelial cells therefore copper depletion inhibits the angiogenic response induced by human brain tumor cells.The study population is patients with glioblastoma multiforme(GBM) aged between 18-65 years in both male and female sex in two intervention and control group and each one consisted of 25 patients.At treatment day,patients based on the main criteria included pathological diagnosis; tumor recurrence; age equal or greater than 18; KPS 60 or more and literacy are classified. in the intervention group, a low copper diet and penicillamine with initial dose of 250 mgr and increased to 1gr and in control group placebo at the same dose will be administered. For control of diet, both groups assess by food frequency questionnaire at the beginning, middle and end of the study. Drug and diet compliance also will be controlled by call. Serum copper concentration will be measured in the time of Baseline and after a month and a half (center study) and at the end of three months (end of study).As the primary outcome factors include VEGF, IL-6, IL-8 , TNF- $\alpha$  and KPS in both groups will be measured at the beginning and end of the study. To investigate the probable side effects of intervention, hemoglobin, WBC, platelet count, creatinine, bilirubin, liver function tests, PT and PTT measure in the beginning, middle and end of the study. Intervention period is considered for 3 months.

#### General information

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT2013101415018N1**

Registration date: **2013-10-27, 1392/08/05**

Registration timing: **prospective**

Last update:

Update count: **0**

##### Registration date

2013-10-27, 1392/08/05

##### Registrant information

###### Name

Alirez Feli

###### Name of organization / entity

Tehran University of Medical Sciences.

###### Country

Iran (Islamic Republic of)

###### Phone

+98 42933050

###### Email address

dr\_feli@yahoo.com

##### Recruitment status

**Recruitment complete**

##### Funding source

Tehran University of Medical Sciences

##### Expected recruitment start date

2013-11-22, 1392/09/01

##### Expected recruitment end date

2014-05-22, 1393/03/01

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

##### Scientific title

Effect of low copper diet and penicillamine combination on VEGF, IL-6, IL-8, TNF $\alpha$  and Karnovski performance

score in high grade brain glioma after Gamma Knife  
Radiosurgery in Iran Gamma Knife Center

### Public title

Effect of low copper diet and penicillamine combination  
on high grade brain glioma

### Purpose

Treatment

### Inclusion/Exclusion criteria

Inclusion criteria: pathologic diagnosis; tumor  
recurrence; Age equal to or more than 18 years ;KPS  
equal to or more than 60 (the status of neurological  
function); informed consent;literacy Exclusion criteria:  
Avastin (Bevacizumab)use; reduction serum copper to  
less than 70 micrograms per deciliter;allergy to penicillin  
and penicillamine; pregnancy; Lack of adequate  
hematologic, hepatic and renal function

### Age

From **18 years** old to **65 years** old

### Gender

Both

### Phase

N/A

### Groups that have been masked

*No information*

### Sample size

Target sample size: **50**

### Randomization (investigator's opinion)

Randomized

### Randomization description

### Blinding (investigator's opinion)

Single blinded

### Blinding description

### Placebo

Used

### Assignment

Parallel

### Other design features

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Tehran University of Medical Sciences

##### Street address

Keshavarz Blvd,Ghods st.

##### City

Tehran

##### Postal code

#### Approval date

2013-09-23, 1392/07/01

#### Ethics committee reference number

17241

## Health conditions studied

### 1

#### Description of health condition studied

Brain tumor

#### ICD-10 code

C71.9,C72.

#### ICD-10 code description

Glioblastoma multiforme unspecified site

## Primary outcomes

### 1

#### Description

Vascular endothelial growth factor

#### Timepoint

Before and after the intervention.

#### Method of measurement

How to measure: ELISA, scale: micro mEq per liter

### 2

#### Description

Interleukin-6

#### Timepoint

Before and after the intervention.

#### Method of measurement

How to measure: ELISA, scale: micro mEq per liter

### 3

#### Description

Interleukin-8

#### Timepoint

Before and after the intervention.

#### Method of measurement

How to measure: ELISA, scale: micro mEq per liter

### 4

#### Description

Tumor Necrosing Factor

#### Timepoint

Before and after the intervention.

#### Method of measurement

How to measure: ELISA, scale: micro mEq per liter

### 5

#### Description

Karnovski Performance Score(KPS)

#### Timepoint

Before intervention,one and a half months after the  
intervention and at the end of intervention.

#### Method of measurement

How to measure: clinical, scale:table

## Secondary outcomes

## 1

### Description

Drug complications

### Timepoint

During the intervention

### Method of measurement

Patient quote and physical exam

## 2

### Description

serum copper

### Timepoint

Before intervention, one and a half months after the intervention and at the end of intervention.

### Method of measurement

How to measure: biochemical, scale: micro gram per deciliter.

## Intervention groups

### 1

#### Description

Dietary and drug intervention for intervention group. Penicillamine capsule 250 mg every 6 hours, orally for 3 months. Low-copper diet according to table provided to patients for 3 months.

#### Category

Treatment - Drugs

### 2

#### Description

The control group received a placebo capsule of 250 mg orally every 6 hours for 3 months

#### Category

Treatment - Drugs

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Iran Gamma Knife Center

##### Full name of responsible person

Alireza Feli

##### Street address

Dastgerdi martyr St., next to Hazrat Ali Asghar(AS) hospital

##### City

Tehran

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

Kamrani charity foundation, Iran Gamma Knife Center

#### Full name of responsible person

Mohsen Bakhtiari

#### Street address

Dastgerdi Martyr St., next to Hazrat Ali Asghar(AS) hospital

#### City

Tehran

#### Grant name

#### Grant code / Reference number

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

Yes

#### Title of funding source

Kamrani charity foundation, Iran Gamma Knife Center

#### 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

University Research vice chancellor

##### Full name of responsible person

Mrs. Rostam abadi

##### Street address

Tehran University of Medical Sciences

##### City

Tehran

#### Grant name

#### Grant code / Reference number

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

Yes

#### Title of funding source

University Research vice chancellor

#### 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

Educational Vice Chancellor

##### Full name of responsible person

Dr. Mohammad javad Hossenzadeh

##### Street address

Tehran University of Medical Sciences

**City**  
Tehran  
**Grant name**  
**Grant code / Reference number**  
**Is the source of funding the same sponsor organization/entity?**  
Yes  
**Title of funding source**  
Educational Vice Chancellor  
**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**  
Tehran University of Medical Sciences, School of Nutritional Sciences and Dietetics  
**Full name of responsible person**  
Alireza Feli  
**Position**  
General Physician  
**Other areas of specialty/work**  
**Street address**  
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## Person responsible for scientific inquiries

**Contact**  
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Mohammad javad Hosseinzadeh  
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Nutritionist, Associate Professor

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## Person responsible for updating data

**Contact**  
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**Full name of responsible person**  
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**Position**  
General Physician  
**Other areas of specialty/work**  
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**Web page address**

## 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*