Intracerebral Administration of Autologous Mesenchymal Stem Cells as HSV-TK Gene Vehicle to Treatment of Glioblastoma: Safety and Feasibility Assessment

Protocol summary

Study aim
Evaluation of safety and feasibility of using bone marrow mesenchymal stem cells containing lentivirus carrying thymidine kinase gene in patients with glioblastoma multiforme.

Design
Uncontrolled phase 1 clinical trial in 5 patients.

Settings and conduct
Five patients with glioblastoma confirmed by two pathologists will be examined in this study. This study does not have a control group and randomization. Patients will be examined every three months until tumor recurrence and death. The study site will be Shohadaye Tajrish Hospital.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Karnofsky performance status > 70. Adequate hematological function (an absolute neutrophil count > 1500/μl and platelet count > 125000/mm3). Adequate renal function (creatinine < 1.5 times the normal). Adequate hepatic function (aspartate aminotransferase and bilirubin < 1.5 times the normal). Patients who fill informed consent. Exclusion criteria: Significant vascular disease. History of recurrent thromboembolism. Prior history of hypertensive crisis or hypertensive encephalopathy. Gastrointestinal fistula or perforation. History of an intraabdominal or intracranial abscess within 6 months. Serious non-healing wound, ulcer and bone fracture.

Intervention groups
Intervention group: This group undergoes gene therapy along with standard treatment (chemotherapy and radiotherapy). From this group of patients, bone marrow stem cells are isolated and brain tumor resection is performed on them. Then 5×10^5 mesenchymal stem cells infected with lentivirus carrying the Thymidine Kinase gene are injected into the evacuated tumor site under the guidance of a brain navigation device. After cell injection, the Ganciclovir drug administration continues for a total of 28 doses over 14 days.

Main outcome variables
Overall survival; progression-free survival.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: IRCT20200502047277N2
Registration date: 2020-10-08, 1399/07/17
Registration timing: retrospective

Last update: 2020-10-08, 1399/07/17
Update count: 0

Registration date
2020-10-08, 1399/07/17

Registrant information
Name
saeed oraee yazdani
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
2017-12-11, 1396/09/20
Expected recruitment end date
2020-09-05, 1399/06/15
Actual recruitment start date
Intracerebral Administration of Autologous Mesenchymal Stem Cells as HSV-TK Gene Vehicle to Treatment of Glioblastoma: Safety and Feasibility Assessment

Evaluation of the safety and feasibility of stem cell-mediated gene therapy in the treatment of glioblastoma

Treatment

Inclusion criteria:
- Karnofsky performance status > 70.
- Adequate hematological function (an absolute neutrophil count > 1500/μl and platelet count > 125000/mm3).
- Adequate renal function (creatinine < 1.5 times the normal).
- Adequate hepatic function (aspartate aminotransferase and bilirubin < 1.5 times the normal).
- Patient who fill informed consent.

Exclusion criteria:
- Significant vascular disease.
- History of recurrent thromboembolism.
- Prior history of hypertensive crisis or hypertensive encephalopathy.
- Gastrointestinal fistula or perforation.
- History of intraabdominal or intracranial abscess within 6 months.
- Serious non healing wound, ulcer and bone fracture.

Age
- No age limit

Gender
- Both

Phase
- 1

Groups that have been masked
- No information

Sample size
- Target sample size: 8
- Actual sample size reached: 5

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

Ethics committee
- Name of ethics committee
  - Ethics committee of Vice-Chancellor in Research Affairs - Shahid Beheshti University of Medical Science
- Street address
  - 7th Floor, Building Number. 2, Shahid Beheshti University of Medical Sciences, Arabi Avenue, Daneshjoo Boulevard, Velenjak, Tehran, Iran.
- City
  - Tehran
- Province
  - Tehran
- Postal code
  - 1989934148
- Approval date
  - 2017-06-07, 1396/03/17
- Ethics committee reference number
  - IR.SBMU.REC.1396.224

Health conditions studied

Glioma grade 4
- ICD-10 code
  - C71
- ICD-10 code description
  - Malignant neoplasm of brain

Primary outcomes

Overall survival (OS) of patients
- Timepoint
  - Before treatment and every three months until the patient's death
- Method of measurement
  - The time from treatment initiation until patient's death

Radiological progression free survival (PFS) of patients
- Timepoint
  - Before treatment and every three months until the disease recurrence
- Method of measurement
  - The time from treatment initiation until disease progression or worsening

Secondary outcomes
- empty

Intervention groups
Description

Intervention group: This group undergoes gene therapy along with standard treatment (chemotherapy and radiotherapy). From this group of patients, bone marrow stem cells are isolated and brain tumor resection is performed on them. Then $5 \times 10^5$ mesenchymal stem cells infected with lentivirus carrying the Thymidine Kinase gene are injected into the evacuated tumor site under the guidance of a brain navigation device. After cell injection, the Ganciclovir drug administration continues for a total of 28 doses over 14 days.

Category
Treatment - Other

Recruitment centers

Recruitment center
Name of recruitment center
Shohadaye Tajrish Hospital
Full name of responsible person
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Grant name

Person responsible for general inquiries

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Person responsible for updating data

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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
No - There is not a plan to make this available
Statistical Analysis Plan
Yes - There is a plan to make this available
Informed Consent Form
No - There is not a plan to make this available
Clinical Study Report
No - There is not a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
No - There is not a plan to make this available
Title and more details about the data/document
through email request
When the data will become available and for how
long
12 month
To whom data/document is available
Principal investigator of other clinical trials
Under which criteria data/document could be used
official request
From where data/document is obtainable
direct request to email
What processes are involved for a request to access
data/document
evaluation of the validity of the applicant
Comments