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A study of cell signalling biomarkers in patients with tuberous sclerosis

Submission date
31/08/2022

Recruitment status
No longer recruiting

Registration date
09/09/2022

Overall study status
Completed

Last Edited
02/01/2024

Condition category
Genetic Diseases

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims?
Tuberous sclerosis is a rare genetic condition that causes mainly non-cancerous tumours to develop in different parts of the body. It is thought that a biochemical pathway known as the mTOR (mechanistic Target of Rapamycin) pathway is overactive in tuberous sclerosis. Specific chemicals found naturally in the blood are linked to this pathway. These naturally occurring chemicals are called biomarkers. These chemicals could show how well the body responds to new treatments and in turn speed up the discovery of new medicines. This study will check that the method by which the biomarkers are being measured is working and appropriate for patients with tuberous sclerosis.

Who can participate?
Patients aged from 10 to 65 years known to have tuberous sclerosis

What does the study involve?
This study requires the patient to provide a blood sample to measure mTOR biomarkers in their blood. No additional medication will be received, and all other treatments for tuberous sclerosis will remain as they are. Wherever possible the study will be conducted as part of usual clinic visits. The first visit is a screening visit so that the doctor can check the patient is suitable to take part, provide the study information and if appropriate, take consent. This will take about 60 minutes. The second visit (up to 6 weeks later) will be to check there are no changes in health status/medications and to take the blood sample. This will take about 30 minutes. To provide this sample, the patient must not eat for 8 hours beforehand (overnight) and avoid drinks containing sugar and alcohol. Then a qualified healthcare professional (nurse, doctor or phlebotomist) will take 10 ml (about 2 teaspoons) of blood. It is intended that extra blood will be taken as part of routine blood tests. Blood will then be transferred, on the same day, to a central laboratory that will analyse your blood sample for the mTOR biomarkers.

What are the possible benefits/risks of participating?
Research like this helps to continually improve the treatments and care provided to all patients. Although no extra benefit is received from taking part in this study the results will be used to support the use of biomarkers in future clinical studies which means it could help in the development of new drugs. The patient's routine treatment remains unchanged. The risk

involved in taking blood is the same as for any clinic visit where blood is taken. At the site where blood is taken there may have pain or bruising and, although extremely rare, an infection could develop. The patient may feel dizzy or could faint during or after blood has been taken.

Where is the study run from?
1. Bristol Childrens Hospital (UK)
2. The Royal Sussex County Hospital (UK)
3. St George's Hospital Medical School (UK)

When is the study starting and how long is it expected to run for?
January 2022 to February 2023

Who is funding the study?
Aeovian Pharmaceuticals Inc. (USA)

Who is the main contact?
1. Dr Sam Amin, sam.amin@uhbw.nhs.uk
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3. Pierre Rehbaum, pierre.rehbaum@iqvia.com

Contact information

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

Integrated Research Application System (IRAS)
316411

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
mTOR Bio-001, IRAS 316411, CPMS 52900

Study information

Scientific Title
A study to validate the assay of biomarkers of the mTOR signalling pathway (p-S6RP(Ser240 /244) for mTORC1 and p-AKT (Ser473) for mTORC2) and other non-genetic biomarkers in whole blood samples from patients with tuberous sclerosis complex (TSC): Biomarkers in Patients with Tuberous Sclerosis (BioPaTS)

Acronym
BioPaTS

Study objectives
It is thought that a biochemical pathway known as the mTOR (mechanistic Target of Rapamycin) pathway is overactive in tuberous sclerosis. Specific chemicals found naturally in the blood are linked to this pathway. These naturally occurring chemicals are called biomarkers. These chemicals could show how well the body responds to new treatments and in turn speed up the discovery of new medicines.

This study will check that the method by which the biomarkers are being measured is working and appropriate for patients with tuberous sclerosis.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 22/7/2022, South Central – Hampshire A Research Ethics Committee (Temple Quay House, 2 The Square, Bristol Research Ethics Committee Centre, BS1 6PN, UK; +44 (0)207 104 8196; hampshirea.rec@hra.nhs.uk), ref: 22/SC/0188

Study design
Non-interventional study

Primary study design
Observational

Study type(s)
Other

Health condition(s) or problem(s) studied
Tuberous sclerosis complex (TSC)

Interventions
This study requires the patient to provide a blood sample to measure mTOR biomarkers in their blood. No additional medication will be received, and all other treatments for tuberous sclerosis will remain as they are. Wherever possible the study will be conducted as part of usual clinic visits. The first visit is a screening visit so that the doctor can check the patient is suitable to take part, provide the study information and if appropriate, take consent. This will take about 60 minutes. The second visit (up to 6 weeks later) will be to check there are no changes in health status/medications and to take the blood sample. This will take about 30 minutes. To provide this sample, the patient must not eat for 8 hours beforehand (overnight) and avoid drinks containing sugar and alcohol. Then a qualified healthcare professional (nurse, doctor or phlebotomist) will take 10 ml (about 2 teaspoons) of blood. It is intended that extra blood will be taken as part of routine blood tests. Blood will then be transferred, on the same day, to a central laboratory that will analyse the blood sample for the mTOR biomarkers.

Intervention Type
Other

Primary outcome(s)
Inter- and intra- assay precision measured as % inhibition of the mTOR signal, as measured by electrochemiluminescence (ECL) units at a single timepoint

Key secondary outcome(s))
The stability of signal in samples after freeze/thawing cycles and long-term storage (up to 1 month), pre- and post-processing of blood will be assessed by measuring ECL signal strength and % inhibition at a single timepoint

Completion date
28/02/2023

Eligibility

Key inclusion criteria
1. Patients who are able to provide written informed consent appropriate to age/local law - patient and/or parent(s)/legal representative who are willing and able to give informed consent /assent for participation in the study
2. Patients who have a definite diagnosis of tuberous sclerosis complex (TSC) according to the Updated International Tuberous Sclerosis Complex Diagnostic Criteria (Paediatric Neurology 123 (2021)
3. Patients who are male or female aged 10 to 65 years
4. All medications or interventions for epilepsy (including ketogenic diet and any neurostimulation devices for epilepsy) must have been stable for 4 weeks prior to the screening visit

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Sex
All

Total final enrolment
14

Key exclusion criteria
1. Patients with a history of pseudo-seizures
2. Patients with clinically significant unstable medical conditions other than epilepsy
3. Patients who have a serious intercurrent illness or uncontrolled disease that could compromise the interpretation of the data from this study
4. Patients who have received treatment with felbamate, unless continuous for >1 year
5. Patients who have received any other investigational product within the 30 days prior to the screening visit
6. Patients who are unlikely to comply with the requirements of this study

Date of first enrolment
05/09/2022

Date of final enrolment
13/02/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Bristol Childrens Hospital
Upper Maudlin Street
Bristol
United Kingdom
BS2 8BJ

Study participating centre
Royal Sussex County Hospital
Brighton
United Kingdom
BN2 5BE

Study participating centre
St George's Hospital Medical School
London
United Kingdom
SW17 0RE

Sponsor information

Organisation
Aeovian Pharmaceuticals Inc.

Funder(s)

Funder type
Industry

Funder Name
Aeovian Pharmaceuticals Inc.

Results and Publications

Individual participant data (IPD) sharing plan

All data generated or analysed during this study will be included in the subsequent results publication

IPD sharing plan summary

Published as a supplement to the results publication

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes