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Dextran studies during acute dengue infection

Submission date	Recruitment status	[X] Prospectively registered
16/07/2008	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
17/07/2008	Completed	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
15/01/2014	Infections and Infestations	[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Dengue is emerging as a major public health issue around the world, and is a very common infection in Vietnam. In a small proportion of cases serious complications occur. In particular some patients develop a problem where the small blood vessels become leaky for a few days, allowing the blood plasma to leak out, and sometimes this leads to shock. At the moment there is no specific treatment available to counteract the leaking, but we think that if we can understand what happens to make the small blood vessels leak we may able to treat this complication more effectively. One way to understand what happens is to give a small infusion of a special kind of carbohydrate (Dextran) solution to a person with dengue and look at the way the carbohydrate leaks out of the blood vessels by measuring the concentration of the carbohydrate in the blood and urine at intervals over a couple of hours after an infusion. The technique is quite safe and is used in studies of many conditions where there is a problem with leaking blood vessels, and is also used to find out about changes to the blood vessels during pregnancy.

Who can participate?
Healthy individuals and patients with dengue aged from 18-30 years old.

What does the study involve?
The carbohydrate infusion will be administered over 2 hours with the participants lying comfortably at rest. A special device for blood sampling will be inserted to allow repeated small blood samples to be obtained at intervals during the 2 hours, together with simultaneous urine samples. The rate of clearance of the carbohydrate from the blood to the urine will be compared in the dengue patients during acute illness with the values in the same patients during recovery, and also with the results from the healthy volunteers.

What are the possible benefits and risks of participating?
There are no specific benefits to the participants at the time of the study, apart from the knowledge that their involvement might lead to improved management of dengue cases in the future. There are very few risks to the study participants; occasionally a person may be allergic to the carbohydrate solution, but the same solution is used very frequently in Vietnam as a treatment for dengue and allergic reactions are extremely uncommon here. In any case patients

are monitored very closely during the infusion, and all necessary treatment for an allergic reaction is immediately available if this does occur. There may be minor bruising at the site of blood sampling.

Where is the study run from?
The study was run by researchers at the Oxford University Clinical Research Unit (OUCRU) Viet Nam; and Hospital for Tropical Diseases HCMC (HTD).

When is the study starting and how long is it expected to run for?
The study ran from August 2008 to July 2009.

Who is funding the study?
The Wellcome Trust (UK).

Who is the main contact?
The Clinical Trials Unit at the Oxford University Clinical Research Unit Viet Nam
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Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

Protocol serial number
ctu02dxdec07

Study information

Scientific Title
Studies to evaluate the functional characteristics of the microvasculature during dengue infection using dextran clearance techniques and glycocalyx volume measurements

Study objectives
This study forms part of a wider programme of research aiming to establish how the virus and/or the patients immune response to the infection interact with the blood vessel walls to cause these effects.

Ethics approval required
Old ethics approval format

Ethics approval(s)
1. Oxford Tropical Medicine Research Ethics Committee (OXTREC) (UK), 25/06/2008, ref: 21/08
2. Hospital for Tropical Disease Ethics Committee, 20/02/2008

Primary study design
Interventional

Study design
Open label descriptive study

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Dengue fever

Interventions
In order to investigate this we will separate healthy volunteers who consent to take part in the study into two groups, 10 assigned to each of the following protocols:
1. The volunteer will rest comfortably in the supine position, while vital signs are taken and two intravenous cannulae are inserted, one in either arm. A baseline blood sample (2 ml) will be drawn, and then after resting for 15 minutes, an infusion of 40 ml of 10% Dextran 40 in 0.9% NaCl (Kraspharma) plus 10 ml of inulin (Inutest, Fresenius), an inert molecule used as the reference for the clearance studies, will be given over 10 minutes. This will be followed by a maintenance infusion of 10% Dextran 40 containing 5% inulin at 1 ml/minute. The volunteer will be asked to empty the bladder at 60 minutes and then all urine produced in the next 20 minutes will be collected. A blood sample (2 ml) will be collected from the contralateral cannula at 70 minutes (i.e. at the mid-point of the 20 minute urine collection). A second blood (130 minutes) and urine (120 - 140 minute collection) sample will be obtained to complete the study. Vital signs will be monitored half-hourly during the procedure. The volunteer will be asked to drink plenty of water during the test to encourage diuresis.
2. The basic protocol is as above, but no maintenance dextran infusion is given after the initial priming bolus. Blood samples (2 ml) will be obtained from the contralateral arm cannula at 10, 20, 30 and 70 minutes following the bolus, together with a timed urine collection from 60 - 80 minutes.

Patients (40) will receive the following treatment:
Adults aged 18 - 30 years presenting to Ward D at the Hospital for Tropical Diseases with suspected dengue during the early febrile phase of the illness will be reviewed daily by a trained study physician, together with daily haematocrit and platelet counts and any other investigations as clinically indicated. Those with evidence of vascular leakage (e.g. rising haematocrit, pleural effusion, ascites or gall bladder wall thickening on ultrasound) but who remain cardiovascularly stable and do not require intravenous fluid therapy will be asked to take part in the study. Following informed consent the dextran studies will be done on day 5 of illness, using one of the protocols described above.

Intervention Type
Drug

Phase
Not Specified

Drug/device/biological/vaccine name(s)
Dextran/inulin

Primary outcome(s)
Comparison of dextran clearances during acute dengue infection with convalescent patterns and results from healthy controls

Key secondary outcome(s)
Comparison of glycocalyx volume measurements during acute dengue infection with convalescent values and results from healthy controls

Completion date
30/07/2009

Eligibility

Key inclusion criteria
Healthy volunteers:
1. 20 healthy Vietnamese persons aged 18 - 30 years, either sex
2. Informed consent

Patients:
1. Vietnamese adults aged 18 - 30 years , either sex
2. Admitted to Ward D at HTD with clinical dengue and evidence of vascular leakage
3. Cardiovascularly stable, not requiring intravenous (IV) fluids
4. Informed consent

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
Healthy volunteers:
1. Febrile illness within the last 3 months

Patients:
1. Medical indication for IV fluid therapy
2. Refusal to consent

Date of first enrolment
01/08/2008

Date of final enrolment
30/07/2009

Locations

Countries of recruitment
Viet Nam

Study participating centre
The Oxford University Clinical Research Unit (OUCRU)
Ho Chi Minh City
Viet Nam
Q5

Sponsor information

Organisation
University of Oxford (UK)

ROR
https://ror.org/052gg0110

Funder(s)

Funder type
Charity

Funder Name
The Wellcome Trust (UK) (grant ref: 077078)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration