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Fluid expansion In severe Malnutrition

Submission date
24/10/2007

Recruitment status
No longer recruiting

Registration date
31/10/2007

Overall study status
Completed

Last Edited
29/01/2016

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Shock is a life-threatening condition that occurs when the body is not getting enough blood flow. Timely and rapid infusion of isotonic fluids is the mainstay for the treatment of shock in children worldwide. The World Health Organization (WHO) recommends infusion of isotonic fluids within the first hour for resuscitation in shock for well-nourished children, and further rehydration (with Ringers Lactate) over 3-5 hours for those with severe dehydration. This is in agreement with other guidelines. However, the same WHO guidelines propose infusion of a lower volume of hypotonic fluid at a slower rate of infusion for the treatment of shock in children with severe malnutrition. The evidence for both of these guidelines is very weak. This study aims to look at the safety and tolerability of modern paediatric critical care standard approaches to managing shock compared to the current standard approach advocated by the WHO.

Who can participate?
Children aged over 6 months with severe malnutrition who are admitted to hospital with or develop shock.

What does the study involve?
Children with shock associated with diarrhoea are randomly allocated to be treated with one of two types of fluid infusion: either Ringers' Lactate or standard WHO management (half strength Darrow's Solution in 5% dextrose). Children with shock but without diarrhoea are randomly allocated to be treated with one of three types of fluid infusion: either 4.5% albumin, Ringers' Lactate or standard WHO management (half strength Darrow's solution in 5% dextrose and followed by blood transfusion for non-responders) .

What are the possible benefits and risks of participating?
Children will be closely monitored and fluids will be given cautiously. Each child will be clinically reassessed after each bolus. Further fluids would be withheld from children showing signs of cardiogenic shock or fluid overload.

Where is the study run from?
KEMRI Centre for Geographic Medicine Research (Coast) at Kilifi District Hospital (KDH), Kenya

When is the study starting and how long is it expected to run for?
January 2007 to February 2009

Who is funding the study?
Wellcome Trust MOP to KEMRI-Wellcome Trust Programme

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
SSC 805

Study information

Scientific Title
Phase II safety studies of volume expansion in children with severe malnutrition and features of hypovolaemia

Acronym
FIM

Study objectives
We aim to examine the safety and tolerability of current World Health Organization (WHO) fluid management regime and compare these to commonly employed resuscitation protocols used in modern paediatric critical care. Our null hypothesis would anticipate that there would be no difference between these protocols in correction of shock.

Ethics approval required
Old ethics approval format

Ethics approval(s)

Kenya Medical Research Institute (KEMRI)/National Ethical Review Committee, 25/08/2006

Study design
Single-centre randomised open-label controlled trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Malnutrition and hypovolaemia

Interventions
Treatment will occur at the Site-Kilifi District Hospital, Kenya.

Randomisation group A: children with diarrhoea - history of acute diarrhoea (greater than 6 watery stools/day) plus a feature of shock (see inclusion criteria). Two fluid resuscitation intervention arms:
1. Ringers' lactate
2. Standard WHO management (using half-strength Darrow's Solution in 5% dextrose)

Randomisation group B: shock without diarrhoea. Three fluid resuscitation intervention arms:
1. 4.5% albumin
2. Ringers' lactate
3. Standard WHO management (using half-strength Darrow's solution in 5% dextrose and followed by blood transfusion for non-responders)

Volume of resuscitation fluid used:
1. Human albumin and Ringer's Lactate: 10 ml/kg or 20 ml/kg if child is hypotensive. Total volumes of fluid given depends on resolution of clinical features of shock
2. Half-strength Darrow's: 15 ml/kg over 1 hour. Further bolus of 15 ml/kg over 1 hour if child responds to fluid. If no response/deterioration, then given 10 ml/kg of whole blood over 3 hours

Intervention Type
Drug

Phase
Phase II

Drug/device/biological/vaccine name(s)
Ringers' lactate, Darrow's solution, albumin

Primary outcome(s)
Resolution of features of shock at 4 hours.

Key secondary outcome(s))
1. In-hospital death
2. Development of serious adverse events such as pulmonary oadema and raised intracranial pressure

Completion date
15/02/2009

Eligibility

Key inclusion criteria
1. Children greater than 6 months (either sex) with severe malnutrition defined as (one of the following):
1.1. Weight for height z score less than -3 or weight for height percentile (WAP) less than 70%
1.2. Mid-Upper Arm Circumference (MUAC) less than 11.0 cm
1.3. Oedema involving at least both feet (kwashiorkor)
2. Children who are admitted with, or develop during the course of admission, one or more of the following features of compensated or decompensated shock:
2.1. Depressed conscious state: prostration (inability to sit up) or coma (inability to localise a painful stimulus)*
2.2. Bradycardia (heart rate less than 80 beats per minute)
2.3. Evidence of shock or dehydration:
2.3.1. Capillary refill time greater than 2 seconds
2.3.2. Temperature gradient (from lower to upper part of leg elicited by running hand up the shin)
2.3.3. Weak pulse volume or systolic blood pressure less than 80 mmHg
2.3.4. Prolonged capillary refill greater than 2 seconds
2.4. Deep 'acidotic' breathing
2.5. Creatinine greater than 80 umols/L

*only if still present after correction of hypoglycaemia

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Lower age limit
6 months

Sex
All

Key exclusion criteria
1. Children of families who decline to consent
2. Haemoglobin less than or equal to 5 g/dl
3. Features of pulmonary oedema (defined as clinical evidence for presence of fine crepitations in both lungs plus oxygen saturations less than 90% in air)
4. Evidence of raised intracranial pressure (brain stem features of coning, systolic blood pressure greater than 90% centile for age plus falling heart rate and/or papilloedema)
5. Known congenital heart disease

Date of first enrolment
01/01/2007

Date of final enrolment
15/02/2009

Locations

Countries of recruitment
Kenya

Study participating centre
PO Box 230
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Sponsor information

Organisation
University of Oxford (UK)

ROR
https://ror.org/052gg0110

Funder(s)

Funder type
Charity

Funder Name
This trial is run as part of the Wellcome-KEMRI Research Programme:

Funder Name
Kenya Medical Research Institute (KEMRI)/Centre for Geographic Medicine Research Coast (Kenya)

Funder Name
The Wellcome Trust (UK) (grant ref: 077092)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	06/10/2010		Yes	No