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A comparison of human leucocyte antigens (HLA) epitope-matched with standard HLA-matched platelet transfusions in raising the platelet count increment in alloimmunised thrombocytopenic patients with aplastic anaemia or low risk myelodysplastic syndrome

Submission date
03/10/2012

Recruitment status
No longer recruiting

Registration date
04/10/2012

Overall study status
Completed

Last Edited
22/01/2021

Condition category
Haematological Disorders

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

Plain English summary of protocol

Background and study aims
Some patients have blood disorders which mean they have very low numbers of platelets. Platelets are a type of blood cell important in preventing and stopping bleeding. Patients with very low numbers of platelets may need regular platelet transfusions. One problem with needing regular platelet transfusions is that some patients may develop an immune response against transfused platelets. The immune response is controlled by human leucocyte antigens (HLA), which are proteins found on the surface of transfused platelets. The body recognises the HLA as being different to their own and makes antibodies to attack them. These patients will need platelets specially matched so their body does not recognise the platelets as being different to their own and destroy them. The purpose of this study is to compare a new method against the current method of selecting platelets for patients who need specially matched platelets. The current method matches platelets by comparing the whole HLA. The new method will only look at a portion of the HLA, called the epitope, that is important in causing an immune response and this should provide an even closer match. To measure the success of the study platelet transfusions we will compare the rise in the patients platelet count after each study transfusion.

Who can participate?
Adults who have aplastic anaemia (low counts of red blood cells, white blood cells and platelets) or myelodysplatic syndrome (low counts of one ore more type of blood cell) and who need regular HLA matched platelet transfusions.

What does the study involve?
You will be asked to have some extra blood tests and complete a questionnaire. You will receive

platelets when they are needed. The study will collect data on a maximum of 10 transfusions. Half of these transfusions will be matched using the standard method of HLA matching and half with be matched using the new epitope method.

What are the possible benefits and risks of participating?
The epitope method of matching platelets should provide a closer match than the standard HLA method which means the transfused platelets will be less likely to be destroyed by the body. There are no additional risks to you having platelet transfusions because the study platelets are the standard units given to patients. The only difference is that study platelets are selected to be a closer match.

Where is the study run from?
King's College Hospital London is the lead site for this study and other large hospitals in the London area and the south east of England will take part. We may also ask hospitals in other parts of England to take part.

When is the study starting and how long is it expected to run for?
October 2012 to May 2017

Who is funding the study?
NHS Blood and Transplant (UK)

Who is the main contact?
Ms Kay Harding
kay.harding@nhsbt.nhs.uk

Contact information

Type(s)
Scientific

Contact name
Ms Emma Laing

ORCID ID
https://orcid.org/0000-0002-8309-0990

Contact details
NHS Blood and Transplant Clinical Trials Unit
Long Road
Cambridge
United Kingdom
CB2 0PT
-
Emma.Laing@nhsbt.nhs.uk

Additional identifiers

Protocol serial number
13193

Study information

Scientific Title
A comparison of HLA epitope-matched with standard HLA-matched platelet transfusions in raising the platelet count increment in alloimmunised thrombocytopenic patients with aplastic anaemia or low risk myelodysplastic syndrome: a double-blind randomised crossover superiority trial

Study objectives
The current method of identifying HLA matched platelets for a patient is not always successful and the likelihood of finding a good donor match for patients with rarer HLA antibodies is low. Evidence from small retrospective studies suggests that matching platelets at the molecular (HLA epitope) level using a program called HLA MatchMaker gives a higher chance of a successful transfusion outcome. However, no studies have prospectively compared the effect of HLA epitope matched platelets on clinical bleeding outcomes and increase in platelet counts. Patients with aplastic anaemia or low risk myelodysplastic syndrome present and ideal group of patients as they frequently require platelet transfusions over a prolonged and often stable period, and often develop HLA antibodies.

This study has been designed to show no difference between how effective transfusion of HLA matched platelets and HLA epitope matched platelets are in increasing the patient platelet count. We predict that HLA epitope matched platelets will be more effective in increasing the patient platelet count. However, to ensure we are able to show that HLA epitope matched platelets do not give poorer platelet increments, we have used a non inferiority approach.

Ethics approval required
Old ethics approval format

Ethics approval(s)
NRES Committee London - Camberwell St Giles, 01/06/2012, ref: 12/LO/0695

Study design
Randomised trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Topic: Blood; Subtopic: Blood (all Subtopics); Disease: Non-malignant haematology

Interventions
Patients will receive one study platelet transfusion eight times, on eight separate occasions. Four of the platelet bags will be chosen using the standard method of HLA matching and four will be chosen using the HLAMatchmaker programme (epitope matched platelets).

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
The rise in platelet count after transfusion measured one hour after transfusion

Key secondary outcome(s))
1. Assessment of bleeding before and after platelet transfusion before transfusion and for 3 days after transfusion
2. Interval between platelet transfusions - The interval between the beginning of the trial transfusion until the next trial transfusion
3. Matched grade for standard HLA matched platelets
4. Number of epitope mismatches for epitope matched platelets
5. Reactions to trial platelets within 24 hours of transfusion
6. Rise in platelet count 24 hours after transfusion
7. Rise in platelet count after transfusion taking into account the platelet dose and patient body size at 1 and 24 hours

Completion date
31/05/2017

Eligibility

Key inclusion criteria
1. Age 16 years or older
2. Patients with aplastic anaemia or low-risk myelodysplastic syndrome
3. Patients who do not benefit from random (non-selected) donor platelet transfusions
4. Patients who require regular platelet transfusions according to local and British Committee for Standards in Haematology (BCSH) guidelines
5. Patients with evidence of HLA antibody(ies)
6. Patients that are expected to require multiple HLA selected prophylactic platelet transfusions

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Total final enrolment
49

Key exclusion criteria
1. Patients with significant and palpable splenomegaly (enlargement of the spleen)
2. Patients who do not have serum HLA antibodies

3. Patients receiving anti-thymocyte globulin (ATG) treatment, specifically for the 5 days of ATG treatment and for the 14 days after ATG treatment. Once recovered from the treatment, the patient would be eligible to participate in the trial.
4. Patients who have previously participated in this study
5. Women who are pregnant or lactating
6. Patients unable to give written informed consent or comply with the protocol

Date of first enrolment
01/06/2012

Date of final enrolment
30/11/2015

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Addenbrooke's Hospital
Hills Rd
Cambridge
United Kingdom
CB2 0QQ

Study participating centre
Hammersmith Hospital
Du Cane Rd
White City
London
United Kingdom
W12 0HS

Study participating centre
King's College Hospital
Denmark Hill
Brixton
London
United Kingdom
SE5 9RS

Study participating centre
Northampton General Hospital
Cliftonville
Northampton
United Kingdom
NN1 5BD

Study participating centre
Nottingham City Hospital
Hucknall Rd
Nottingham
United Kingdom
NG5 1PB

Study participating centre
Peterborough City Hospital
Edith Cavell Campus
Bretton Gate
Peterborough
United Kingdom
PE3 9GZ

Study participating centre
Princess Royal University Hospital
Farnborough Common
Orpington
Kent
United Kingdom
BR6 8ND

Study participating centre
Queen Alexandra Hospital
Southwick Hill Rd
Portsmouth
United Kingdom
PO6 3LY

Study participating centre
Royal Bournemouth Hospital
Castle Ln E
Bournemouth

United Kingdom
BH7 7DW

Study participating centre
Royal Free Hospital
Pond St
London
United Kingdom
NW3 2QG

Study participating centre
Royal Hallamshire Hospital
Glossop Rd
Sheffield
United Kingdom
S10 2JF

Study participating centre
St James's University Hospital
Beckett St
Leeds
United Kingdom
LS9 7TF

Study participating centre
University College Hospital
235 Euston Rd
Fitzrovia
London
United Kingdom
NW1 2BU

Study participating centre
University Hospital Lewisham
Lewisham High St
London
United Kingdom
SE13 6LH

Sponsor information

Organisation
NHS Blood and Transplant Research & Development (UK)

ROR
https://ror.org/0227qpa16

Funder(s)

Funder type
Government

Funder Name
NHS Blood and Transplant

Alternative Name(s)
National Health Service Blood and Transplant, UK National Health Service Blood and Transplant, NHSBT

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	16/10/2020	20/10/2020	Yes	No
Results article	results Participant information sheet	21/01/2021	22/01/2021	Yes	No

Participant information sheet	11/11/2025	11/11/2025	No	Yes