NHS
Blood and Transplant

NHSBT Board

28th January 2021

Patient Story: Support for a sickle cell patient on a regular red cell exchanges

Patients with sickle cell disease are often treated with red cell exchanges every 4-8 weeks. Abnormal, sickle shaped red cells are replaced with donor red cells via apheresis. The number of red cell donations that are needed varies depending on the height and weight of the patient but could be as high as 10 units per exchange procedure. One such patient is a 53- year-old woman who undergoes regular red cell exchanges to help prevent strokes, a common complication of sickle cell disease.

Optia Apheresis Machine

Since 2018, a formal process has been in place to support this patient's treatment. Her Rh type is an uncommon one, (R2R2) which is present in about 2.5% of White people and <0.5% Black people. Our patient has, over time, developed antibodies to five clinically significant, high frequency markers (antigens) found on red blood cells. This means that we are unlikely to find enough suitably matched blood in our routine stocks. We use our special donor call-up procedure to contact suitable donors and invite them to donate within a specific timeframe to ensure that the blood is as fresh as possible.

Blood donors and NHSBT staff have been supporting this patient's red cell exchanges in a formal way every 6 weeks since late 2018.

In preparation for each exchange, Medical and Clinical Support staff from Sheffield, Manchester and Birmingham review the records of approx. 130-140 donors (this has increased over time). Approximately 90 of these donors "appear" eligible to donate but this includes 20+ donors who haven't donated in the past 2 years. Taking into account the availability of suitable donor sessions and previous donation history, we routinely contact around 20 donors each time. We are usually able to book appointments for 12-15 donors, which secures the 8 or 9 donations that are required. We alert the session staff and manufacturing centres prior to each expected donor. We then contact each donor post donation to thank them for their support.

Thanks to the support of a dedicated panel of regular donors, NHSBT has improved the life of this patient and enabled the hospital team to manage her disease. However, supporting these exchanges requires a lot of resource and involves many collection teams, donor centres and of course, RCI, Manufacturing, Testing and Hospital Services staff. It is an uncommon, difficult but very real clinical problem. Initiatives to understand this more, and to prevent and treat alloimmunisation, include working with the National Haemoglobinopathy Register to understand how many people, particularly with sickle cell disease, are being regularly transfused, encouraging more Black people to become blood donors, increased secondary screening of donors to have more donors fully typed, understanding the potential benefits of wider scale genotyping of donors and planning a trial of more fully matched blood. Whilst the problem itself has been long recognised the mechanisms and solutions are not yet well understood and this will be part of our continued focus.