NHS Blood & Transplant - Managing patients on monoclonal antibody therapies – an information pack for hospital transfusion laboratories, transfusion practitioners & Haematology clinical teams

Summary

Treatments which include monoclonal antibody-based therapies are being identified and developed for use in clinical practice in the treatment of patients with haematological and other malignancies. Guidance from the National Institute of Health and Care Excellence (NICE) has supported the use of the monoclonal anti-CD38 therapy, Daratumumab (Darzalex®) or Isatuximab (Sarclisa®) in patients with relapsed or refractory Multiple Myeloma (MM) or light chain amyloidosis. Anti-CD38 TMAb use has also been described in patients with Autoimmune Haemolytic Anaemia (AIHA). Other monoclonal therapies may include immune checkpoint inhibitors, or therapies currently at clinical trial stage including anti-CD47 specific agents, for example, Magrolimab (previously known as Hu5F9-G4), used in patients with Acute Myeloid Leukaemia (AML) or Myelodysplastic Syndrome (MDS). Additional anti-CD47 TMAbs that may be encountered in trial phase include Evorpacept (ALX-148), which has been used in patients with advanced solid organ tumours.

These therapies, however, have the potential to adversely interfere with serological investigations and compatibility testing in the blood bank, potentially causing unnecessary delays in providing blood components for transfusion. This means that there may be a potential for delay in treatment of these patients, many of whom are transfusion dependent. Different monoclonal antibody therapies may affect serological testing methods in a variety of ways, and monoclonal antibody-induced reactivity can persist for up to 6 months after the last treatment infusion, depending on the therapy used.

The following information and accompanying slide pack is intended to guide hospital transfusion laboratories, transfusion practitioners & Haematology clinical teams in their management of patients on monoclonal antibody therapies.

Testing Procedure

The following testing protocols should be undertaken in the hospital blood bank, according to local procedures or referred to the local Red Cell Immunohaematology (RCI) Laboratory for testing, as required. (See the April 2017 addendum to the BSH Guideline for Pre-Transfusion Compatibility Procedures in Blood Transfusion Laboratories for details)

IMPORTANT: Please make the hospital blood bank and / or the RCI laboratory aware that the patient is about to start or has already started monoclonal antibody therapy.

For patients being considered for monoclonal antibody therapies. Anti-CD38 (Daratumumab / Isatuximab) / Anti-CD47 (Magrolimab)

1. Baseline ABO and D group (follow local policy for requirement of confirmatory sample rule for ABO and D group)
2. Antibody screen, and antibody identification, if required.
3. Direct Antiglobulin Test (DAT)
4. Extended phenotyping/genotyping for C, c, E, e, K, (k if K+), MNSs, Jk^a , Jk^b , Fy^a and Fy^b groups within local hospitals or referred to the local NHSBT RCI laboratory if required. (Genotyping to be used if the patient has been recently transfused, < 1month ago)

For patients who are already on anti-CD38 therapies (Daratumumab/ Isatuximab)

1. ABO and D typing as per normal method
2. Antibody screening, and antibody identification if required, using a strategy to avoid the effect of anti-CD38, e.g. reagent cells treated with 0.2M Dithiothreitol (DTT).
3. Red cells should be matched for Rh and K as well as for any alloantibodies

For patients who are already on anti-CD47 therapies (Magrolimab)

1. ABO and D typing as per normal method. If the ABO group cannot be concluded, group O red cells may be required for transfusion
2. In patients who have a panagglutinin in serological testing, alloadsorption studies may allow satisfactory antibody detection / identification in some cases. Please refer samples to your local NHSBT RCI laboratory.
3. Extended phenotype / genotype matched RBC may be provided if the serology is unresolvable, and the extended phenotype or genotype is known.
4. The use of a different monoclonal anti-IgG may assist in the indirect antiglobulin testing of these patients.
5. Onward referral to an NHSBT RCI laboratory for investigation by Capture methodology may be necessary if extended phenotype / genotype matched cells are not available, or if an extended phenotype / genotype is not known. Contact your local NHSBT RCI laboratory for advice before referral.

Communication

A breakdown in communication between patients, clinical teams and laboratory staff can lead to unnecessary delays in providing blood components for transfusion and may have an adverse impact on patient care.

Patients

Patients who are about to begin monoclonal antibody therapies should be provided with a card alerting the clinical team to their condition and treatment. An example of a patient card is given in the accompanying slide pack. This card should be shown to clinical staff at any hospital where the patient receives treatment, should the patient be admitted at an alternative location to the haematology clinic. Patients should carry their patient card for up to 6 months after their treatment has ended because of the persistence of monoclonal antibody-induced reactivity and interference in blood bank testing.

Clinical teams

It is vitally important that the hospital blood bank and / or the local NHSBT RCI laboratory is informed that the patient is about to start or has already started a monoclonal antibody therapy. Details of the monoclonal antibody therapy may be indicated in the special requirements section on the blood transfusion request form in addition to any other special requirements i.e., Irradiated units, if indicated.

Laboratory teams

Patients should be investigated according to the testing procedure above. If the patient has previously been referred to an NHSBT RCI laboratory for investigation, specific patient reports and further information regarding serological testing performed can be found on the online NHSBT Sp-ICE browser.

Planning of transfusion

The following recommendations have been made in the April 2017 addendum to the BSH guidelines Pre-Transfusion Compatibility Procedures in Blood Transfusion Laboratories, Available at:

https://www.b-s-h.org.uk/media/15725/monoclonal-antibodies-addendum.pdf

Red cells should be matched for ABO, Rh and K as well as for any alloantibodies, if present.

K negative red cells should be provided for patients unless they are known to be K positive; in this case, k negative red cells should be provided on the rare occasion that the patient is K+k-

Transfusions for patients on monoclonal antibody therapies should be planned during routine hours and should allow sufficient time for extended serological testing and crossmatching, once received at an NHSBT RCI laboratory.

Out of hours, investigations and crossmatching for patients on monoclonal antibody therapies will not be routinely performed by NHSBT RCI staff, except in an emergency. Please contact the local RCI laboratory for advice in this circumstance.

Essential Information

An accompanying slide pack has been produced by NHSBT to aid hospital transfusion laboratories, transfusion practitioners & Haematology clinical teams in the management of these patients.

The slide pack is published in the Clinical Guidelines section on the NHSBT Hospital and Sciences website. – copy the link below

https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/30196/inf1476-2-monoclonal-antibodies.pdf