Collaborative Management of a Pre-Stem Cell Transplant Patient Requiring Rare Blood

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Introduction

Myelofibrosis is a clonal myeloproliferative neoplasm of pluripotent haematopoietic stem cells, characterised by progressive bone marrow fibrosis, with anaemia typically present.

Patients with symptomatic anaemia often become transfusion dependent.

Stem cell transplant (SCT) is the only curative option.

Here we describe a patient with myelofibrosis selected for SCT with a rare blood requirement and the multidisciplinary approach to provide suitable red blood cell (RBC) units.

Method

Red Cell Immunohaematology (RCI) received samples from a 53-year-old patient with myelofibrosis.

Discussion between NHSBT and Hospital Consultants identified that the patient had secondary myelofibrosis.

SCT was planned four months from referral.

Previous serology showed allo anti-s and allo anti-Do(b).

The percentage of the UK donor population antigen negative for s is 11% and Do(b) is 18%.¹

Investigation also identified anti-Wr⁺, a clinically significant antibody against a low frequency antigen.

Results

- A search of NHSBT blood stocks did not identify any fresh Do(b⁻), s⁻, Wr(a⁻) RBC units.
- The National Frozen Blood Bank identified two Do(b⁻), s⁻ units requiring Wr⁺ phenotyping post thaw, risking wastage if not antigen negative.
- A donor call-up was initiated by NHSBT’s rare donor team.
- Do(b) genotyping was required as there is no Do(b) phenotyping antisera. The International Blood Group Reference Laboratory (IBGRL) were responsible for this testing.

Figure 1: Teams Contributing to the Transfusion Management of a Stem Cell Transplant Patient with a Rare Blood Group

1. Hospital Haematology Consultants
2. Hospital Transfusion Laboratory
3. Hospital ward team
4. NHSBT RCI
5. NHSBT Clinical Team
6. NHSBT Hospital Services
7. NHSBT Transport
8. NHSBT Donation
10. NHSBT Rare Donor Team
11. IBGRL Red Cell Reference
12. IBGRL Molecular Diagnostics
13. NHSBT Blood Donation Teams (various locations)

Due to the scarcity of eligible donors, the hospital and NHSBT agreed a Plan B:

1. Review current antibody activity.
2. Remove requirement for s⁻ or Do(b⁻) units, depending on current strength of antibody reactions.
3. Monitor closely for a haemolytic transfusion reaction and mitigate with steroids and IVIg as appropriate.

Conclusion

A large number of different teams were needed to support the transfusion management of this patient requiring rare blood.

Transfusion with compatible RBC units was achieved through a multidisciplinary approach, with clear communication across organisational boundaries, effective teamwork and the support of suitably matched blood donors.

References:


Acknowledgements: