UK NEQAS
International Quality Expertise

Histocompatibility & Immunogenetics

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Interpretive Educational Scheme (iED)
Clinical Scenario 3/2019 – Platelet Refractoriness Case

Dispatched on 07th January 2020

Summary of Results

A total of 37 responses were received (20 from UK and Ireland (UK&I) Participants and 17 from the Rest of the World (RoW)).

1) Based on the data provided, identify three optimal donors for the recipient and detail the reasons the selection.

Donor Priority	Donor ID	Most Common Reasons for Selection of Donor	UK&I (n=20)	RoW (n=17)	Total (n=37)
First Choice	W	Best HLA matched donor (B1)	11	1	12 (32%)
		HLA mm is within a CREG shared with recipient			
		No DSA			
		No requirement for CMV negative platelets given			
		Blood group mismatch			
	G	B2 match	5	9	14 (38%)
		No DSA			
		ABO compatible			
		CMV negative			
	S	B2 match	2	6	8 (21%)
		ABO match			
		No DSA			
		CMV status is not relevant in local policy			
	B	Only two mismatched antigens	1	0	1 (3%)
		ABO group O universal donor			
		No DSA			
	M	Matched for HLA-A33 and HLA-B18. Mismatched for HLA-68 and HLA-B65.	1	0	1 (3%)
		No DSA			
		There is not a request for RhD or CMV negative units.			
	I	ABO compatible	0	1	1 (3%)
		No DSA			
		CMV negative			
Second Choice	**G**	B2 Match	4	6	10 (26%)
		No DSA			
		CMV negative			
	K	B2 match	6	2	8 (21%)
		No DSA			
		ABO compatible			
		CMV positive – not relevant			

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	M	B2 match No DSA CMV negative ABO incompatible – poorer increments possible	3	2	5 (14%)
	B	B2 match – B7 high frequency mismatch No DSA ABO compatible CMV positive	5	0	5 (14%)
	U	No DSA CMV negative ABO needs to be confirmed	1	3	4 (11%)
	S	No DSA Some HLA matching	3	0	3 (8%)
	W	B1 match No DSA	1	0	1 (3%)
	O	No DSA Homozygous HLA-A and B so lower probability of immunisation	0	1	1 (3%)
Third Choice	**W**	No DSA B1 match ABO and CMV mismatch	3	0	3 (8%)
	O	B2 match No DSA ABO compatible CMV positive	4	4	8 (22%)
	B	B2 match No DSA ABO compatible	2	4	6 (16%)
	K	B2 match No DSA ABO compatible CMV mismatch	6	3	9 (24%)
	U	No DSA CMV negative ABO compatible	3	2	5 (14%)
	G	CMV negative ABO compatible No DSA	1	2	3 (8%)
	L	ABO compatible CMV negative	1	0	1 (3%)
	S	No DSA CMV negative ABO compatible	0	2	2 (5%)

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2) Based on the increment and transfusion data provided would you suggest any additional testing for this patient? What are the reasons for your decision?

Answer	Reasons for Decision	UK&I (n=20)	RoW (n=17)	Total (n=37)
Yes	Patient is incrementing but levels are decreasing.	7	9	16 (43%)
	Recommend HPA and ABO antibody titre testing.			
	Perform HLA antibody monitoring.			
	Test for autoantibodies.			
	Consider anti-D prophylaxis,			
No	Acceptable increment post transfusion.	13	8	21 (57%)
	Review HLA antibody status.			

3) Based on the new information provided common on the suitability of the following available platelet units for the patient.

Unit ID	Suitability	Selected Comments	UK&I (n=20)	RoW (n=17)	Total (n=37)
4.1	Not suitable	DSA to B35 (MFI 6389) and A24 (MFI 832). Unlikely to increment. Risk of immunising patient against A30 which is present in the potential HSCT donor.	18	15	33 (89%)
	Could be considered	Unit is ABO and CMV matched. DSA but Patient's own type is positive in SAB test. Local policy would be to adjust cut off for positivity to level of self-reactivity. CMV negative and blood group match.	2	2	4 (11%)
4.2	Not suitable	High risk of sensitising patient to the potential HSCT donor due to presence of A1. As patient required HSCT only provide CMV matched platelets.	17	8	25 (68%)
	Could be considered	B2 match. Mismatches are high frequency. A1 mismatch present in potential HSCT donor. No DSA. CMV positive. Only use if no alternative. Could be given post-HSCT.	3	3	6 (16%)
	Suitable	No DSA. CMV positive.	0	6	6 (16%)
4.3	Not suitable	DSA. Potential allelic B*18:01 antibody (or self reactivity in the Luminex assay). Perform high resolution typing.	2	5	7 (19%)
	Could be	B2 mismatch grade, blood group and CMV	3	5	8

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	considered	matched. Potential allelic B*18:01 antibody. Risk of failure to increment. Perform high resolution typing. If self-reactivity then unit suitable for use.			(22%)
	Suitable	ABO and CMV match. No DSA. B2 match. B3 match. Would accept the risk of sensitising the patient. Investigate B18 antibody.	15	7	22 (59%)

4) What advice would you give the clinician in light of the blood service are unable to provide irradiated platelets for this patient?

Advice for platelet selection	Reasons
Use CMV Negative Platelets	• Patient is CMV negative. • Avoid primary CMV infection.
Select HLA matched units in the graft v host direction	• To avoid the risk of transfusion induced graft vs host disease. • High risk of TA-GVHD in homozygous platelets which are matched in the HvG direction but potentially mismatched in the GvH direction.
Select HLA mismatched platelet units	• The patient is immunocompromised, therefore, supplying HLA mismatched platelets is the best way to avoid Transfusion Associated GVHD (TA-GVHD). Non-irradiated, HLA selected platelets would need to be issued under medical concession. • Avoidance of homozygous donors will minimise the risk of TA-GVHD as the patient will be able to recognise the donor lymphocytes as non-self. However, this may be associated with poor increments.

Select irradiated units from another source/ Send platelets to another centre for irradiation	• The patient will be at high risk of graft versus host due to;
	  • The patient being immunocompromised as a result of the HSCT transplant
	  • The HLA disparity in the platelet units available and the HSCT transplant.
	• BCSH guidelines state that all HLA selected products should be irradiated prior to transfusion to avoid TA-GvHD.
	• Leukocyte reduction filters are not considered adequate to remove enough white cells to guarantee prevention of GVHD. Residual leukocytes in a platelet unit could cause GvHD in patients who are immunosuppressed as a result of their HPCT conditioning regimen.
	• To avoid the risk of transfusion induced graft vs host disease.
	• Cannot issue platelets that have not been irradiated.
	• Current guidelines state that HLA selected platelets issued to HSCT patients (especially if immunocompromise) should be gamma irradiated to prevent the risk of engraftment causing TA-GvHD which has a >90% fatality rate.

Select units towards end of shelf life	• Viable lymphocytes will be reduced.
Use vironinactivated platelets	• The patient is CMV-, so there is a risk of CMV infection.

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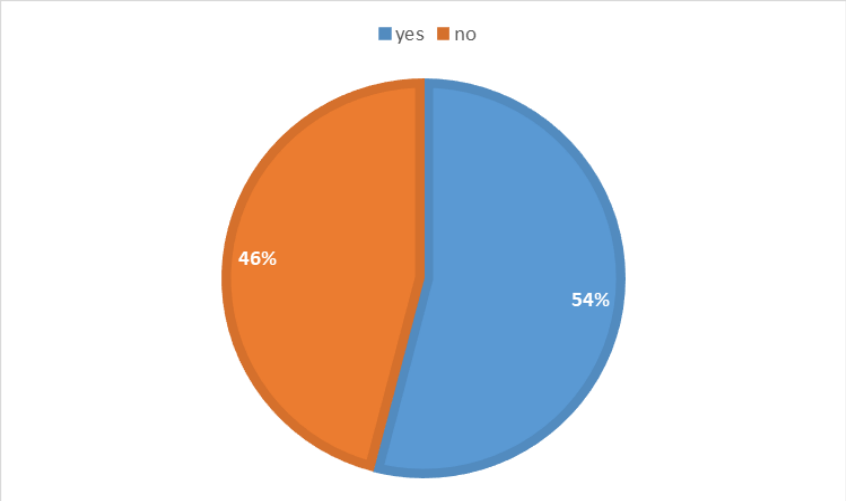
Transfuse non-irradiated platelets	• Treat patient with intercept to cause inactivation of nucleated cells.
Use platelets treated with Amotosalen	• If platelets treated with amotosalen then do not require irradiation to prevent transfusion graft host disease which could occur in immunosupression recipient.
Transfuse irradiated or not, if patients platelet count <10 G/L or <20G/L + bleeding	• Bleeding risk is higher than Graft versus Host disease risk (if low patients platelet count at the moment).

5) Does your laboratory provide a platelet clinical service?



Platelet Service	UK&I (n=20)	RoW (n=17)	Total (n=37)
Yes	**7**	**14**	**21 (46%)**
No	**13**	**3**	**16 (54%)**

Any Other Comments?

- The lab does antibody testing and HLA typing for platelet refractory patients, but we do not select and issue platelet units. Clinical advice is given by our consultant if needed.
- In France treatment by amotosalem of all platelet units allows us not to take care of CMV status and not to irradiate units before transplantation.
- We only look for HLA Ab. Platelet donors are chosen by another service of our Blood Centre.