

Immunohematology Case Studies 2017 – 8

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Clinical History



- Patient presents Jan 2011. Diagnosis: Pre-op
- March 2011. Diagnosis: Bleeding from rectum.
- June 2014. Diagnosis: Anaemia
- January 2015. Diagnosis: Chronic Myelo-Monocytic Leukaemia

Serologic History



- Jan 2011 Group O Positive, no irregular antibodies, 4 RBC units ordered
- March 2011: 2 RBC units ordered. Blood Bank screen positive (one out of three cells) on Autovue (automated microcolumn assay). 2 out of 26 units on Autovue are compatible and issued.
- Sample referred to IRL

Routine methods utilized in Reference Lab



Antibody Screen Method:

Column Agglutination Technique in IAT and enzyme Manual Saline tube and AHG method

Antibody Identification Method:

Column agglutination technique in IAT and enzyme Manual saline tube and AHG method

March 2011



 In Reference Lab Antibody screen positive in enzyme and AHG (one out of three cells), using Serascan on Grifols WaDiana

📲 Serascan Diana 3/Serascan Diana 3P

Antigens table/Tabla de antigenos/Tabela de antigénios/Πίνσκος οντηγόνων/Antigenní tabulka/Antigénná tabul/ka/Antigén táblázat /Tabela antygenów

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International Society of Blood Transfusion



Antibody unidentified with identsera Diana in enzyme and AHG media

Identisera Diana/Extend-Identisera Diana P/Extend P

Antigens table/Tabla de antígenos/Tabela de antigénios/Πίνακας αντιγόνων/Antigenní tabulka/Antigénná tabul'ka/Antigén táblázat /Tabela antygenów/Антигенный профиль пане

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June 2014



- June 2014: Serascan AHG positive, enzyme negative
- This is different to the way the patient presented before – now it seems as if the antibody is destroyed in enzyme medium
- Antibody still unidentified in AHG medium. An antibody outside of the panel cells is suspected
- 3 RBC units requested



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Antigens table/Tabla de antígenos/Tabela de antigénios/Πίντικας αντιγόνων/Antigenní tabulka/Antigénná tabul'ka/Antigén táblázat /Tabela antygenów/Антигенный профиль панели

	Donov/Dopante/ Dador/Ocitric/ Dárce/Darca/	Rh Phenotype/Fenotipe Rt/ Φαινότυπος Rh/ Fenutyp Rh/Rh fenotipus/			R	h-hr	_				K	el			Dy	iffy	Kin	đđ	Le	wis	P		MI	NS		Lu	th.	Xg	Spatial autoros/viterum capatales Antipetors expectais Educionyches Yahanis antipety/failure autority		Resu	ts/Resulta Výsledky/E Wyniki/P	los/Anotelé redményel asynatata	έσματα/ κ/
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3	2571504	ccDee R₀r	+	0	0	+	+	0	0	+	. 0	+	0	+	0	÷	0	Ŧ	0	+	+	+	0	+	0	0	+	0		3	0			1
4	4299024	ccddEe r''r	0	0	+	+	+	0	0	+	0	+	at	+	0	+	+	0	0	+	+	+	0	+	+	0	+	+		4	1+			
5	3458678	CCDEE R2R2	+	0	+	+	0	0	0	+	+	+	nt	+	+	+	0	÷	0	+	0	+	0	0	+	0	+	+		5	1+			
6	4487195	C ^w CDee R ₁ ^w R ₁	+	+	0	0	+	+	0.	+	0	+	nt	+	+	+	+	0	÷	0	+	+	+	+	+	0	+	+W		6	Ø			
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11	2474282	CCDee R1R1	+	+	0	0	+	0	0	+	0.	+	nt	+	0	+	+	0	0	+	0	0	+	+	+	0	+	0		11	0			

December 2014



- December 2014: Serascan AHG and enzyme pos, Identsera Diana pos in AHG and enzyme, still unidentified
- Now the antibody is presenting in enzyme again!
- Anti-S suspected in AHG, but later excluded.





Identisera Diana/Extend-Identisera Diana P/Extend P

	Donneur/Spender/ Donatore/Verid/	Phénotype Kh /Kh- Phänotyp/ Ferotipo Rh/Rh Fexotpl/ Bh Feantings				Rb	/ -hr					K	ell			Du	iffy	, Ki	dd	Lei	ŴŚ	p		N (NS		L.	th.	Xg	Antigènes spéciaux (Special) Antigene, Antigen' Special) Ocel Antigenier/		Rés	ultats/Resu Sonuçlar/I	ritat/Risult Rezultatas
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3	4314797	ccDee	Ror	+	0	0	+	+	0	0	+	0	+	nt	+	0	÷	+.	0	0	+	0	Û	+	0	+	0	+	0	Bga(+)	3	Ø.	5	
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5	0150256	CCDEE	R2R2	+	0	+	+	0	0	0	t	0	ŧ	0	+	0	t	0	+	.+	0	+	+	0	+	4	0	÷	0	Co(b+)	5	U.	\mathcal{Q}	
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Tableau d'antigènes/Antigen Tabelle/Tabella Antigenica/Antijen Tablosu/Antigenų lentele

January 2015



- Jan 2015: Serascan AHG and enzyme pos, possible anti-Fyb + unidentified Ab? Patient types weakly positive for Fy^b – transfused cells expected...but anti-Fy^b excluded
- Leukaemia diagnosis makes us think about antibodies with HTLV-like characteristics?
- Finally able to perform genotyping

Patient nam	ne:	Undefined	Ordered by: Ordering institution:		
Patient #: Sample Id.: Sample typ	e: na date:	DNA 18/05/2015	Test performed: Software version: Lot #: Enzyme lot #:	ID CORE XI 2.1.1 0202010002 145051576	
Blood Group	Alle	les Assayed	Genotype Result	Antigens (ISBT Phenotype)	Predicted Phenotype Result
System	RHCE*ce			C. (RH:2)	+
	RHCE*Ce			E (RH:3)	+
	RHCE'CE			-c (BH:4)	+
	RHCE*ceCW			e (BH:5)	+
	RHCE*CECV			CW (RH/8)	0
Bh	RHCE*CeFV		HHCE CE, HHCE CE		0
	RHCE*cEFM	261	м. М		
	RHCE*ce[73:	3G]		mrs (RH:19)	-
	RHCE*CE-DI	2, 5, 7]-OE		VS (RH:20)	
	RHCE*cE[69 RHD*r's-RHC	7G,712G,733G] `E*ce[733G,10061]		hrB (RH.31)	+
Kell	KEL'K_KPB KEL'K_KPB KEL'K_KPA KEL'K_KPB	JSB JSB JSB JSA	KEL*K_KPB_JSB	K (KEL:1) K (KEL:2) Kpa (KEL:3) Kpb (KEL:4) Jsa (KEL:6) Jsb (KEL:7)	
	JK*A			Jka (JK:1)	0
Kidd	JK*B JK*B_null(87	(1C)	JK*B	Jkb (JK:2)	+ +
	JK*B_null(IV FY*A	S5-1a)		Fya (FY:1)	0
Duffy	FY*B		FY*B, FY*B_GATA	Eub (EY 2)	*** ***
	FY*B[2657]	FY*X		M (MNS:1)	0
	GYPA'M GYPA'N		GYPA*N	N (MNS:2)	+
	GYPB's			S (MNS:3)	0
MNS	GYPB'S GYPB*Mor		CVDPto	s (MNS:4)	+
	GYPB'delet	lon	GTPB'S	U (MNS:5)	+
	GYPB*S_nu	(II(230T)		Mia (MNS:7)	0

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Genotyping Results

Interim Antibody Identification Possible Answers and Next Steps



- May 2015: IDCore^{XT} genotyping platform: prediction of a rare k neg type!!...is this a possible anti-k + an unidentified antibody?
- Sept 2015: sent to IBGRL to investigate as some k neg donors are now crossmatching incompatible
- Interim treatment k negative units that cross match compatible

Challenge with the Current Presentation



- The antibody screen was positive in IAT and in enzyme.
- The Ab looked like an anti-Fy^b in AHG phase and unidentified in enzyme
- The patient typed Fy^b positive, so anti-Fy^b was discounted
- Treatment k neg, (to prevent allo-immunization)
- Had few k neg donors
- By Aug 2015 some k neg donors crossmatch incompatible
- Increased effort to test for more k negative donors

Further work



- 2015 2016: 662 known K pos donors are serologically typed for k
- 17 new k neg rare donors identified
- Referred patient sample to IBGRL: Anti-Ch (CH/RG1) and a non-specific papain autoantibody is identified. Anti-Fy^b and anti-S are excluded

Brief Review of the Blood Group System Chido/Rodgers



- Not true blood group antigens (passively adsorbed onto the RBC membrane)
- Located on a fragment of C4B
- Destroyed by enzymes
- Anti-Ch does not cause HTR or HDFN
- Antigen neg blood not required for transfusion
- Antibodies are generally IgG
- Detection requires IAT

Summary of Case Challenges



- Insufficient patient samples received
- Patient attended different hospitals. Records not linked at first
- Treatment k neg blood to prevent alloimmunisation
- Not enough k neg donors
- Genotyping device not always available
- Very expensive to send samples to IBGRL as much as a plane ticket (from Cape Town!)

Lessons Learned by the Case



- Perform extended typing and genotyping sooner on patients with unidentified antibodies
- Update records on each case presentation fully. Redesign computing form to include a section with all previous records visible on one page
- Patient received 16 k positive units over a 4 year period, no anti-k was produced – possibly due to immunosuppression caused by chemotherapy?