

Naturally occurring non-ABO alloantibodies in voluntary blood donors

Sir,

Normally, an individual has anti-A and anti-B antibodies present. Pregnancy, transfusion, transplantation, or injections of immunogenic material may cause immunization to red cell antigens. Sometimes, no specific immunizing event can be identified for the production of an antibody against a red cell antigen. Such antibodies are called naturally occurring antibodies.^[1,2]

This study was a descriptive study done prospectively; it was carried out at the red cell serology laboratory of the department of immunohematology and blood transfusion over a period of 6 months from June to December 2014. This study was approved by the institutional ethics committee.

Blood samples collected in pilot tubes (ethylenediaminetetraacetic acid and plain) from 6372 voluntary blood donors ($n = 6372$) from outdoor blood donation camps who had no history of previous blood transfusion, pregnancy, organ or stem cell transplantation, or transfusion of immunogenic material were subjected to blood grouping and antibody screening in the fully automated immunohematology system "Qwalys-3 (Erythrocytes Magnetized Technology)" [Figure 1].

The samples giving a positive result were subjected to manual antibody screening by column agglutination technology in commercially available three-cell antibody screening panel (Bio-Rad) with an autocontrol followed by antibody identification by extended eleven-cell panel if positive reaction on three-cell panel [Figures 2 and 3].

A total of 19 antibodies were detected with 7 cases of anti-M (male: 6, female: 1), 4 cases of anti-N (male: 4, female: 0), 2 cases of anti-K (male: 2, female: 0), 4 cases of anti-LFA (antibodies against low-frequency antigens) (male: 3, female: 1), 1 case of anti-P1 antibody (male: 1, female: 0), and 1 case of anti-Le^a (male: 1, female: 0). Similar findings of naturally occurring such antibodies have been found in several other studies and mentioned in textbooks.^[3-8]

The study had few limitations. Automated immunohematology system detected mainly IgG antibodies, so it was possible that many IgM

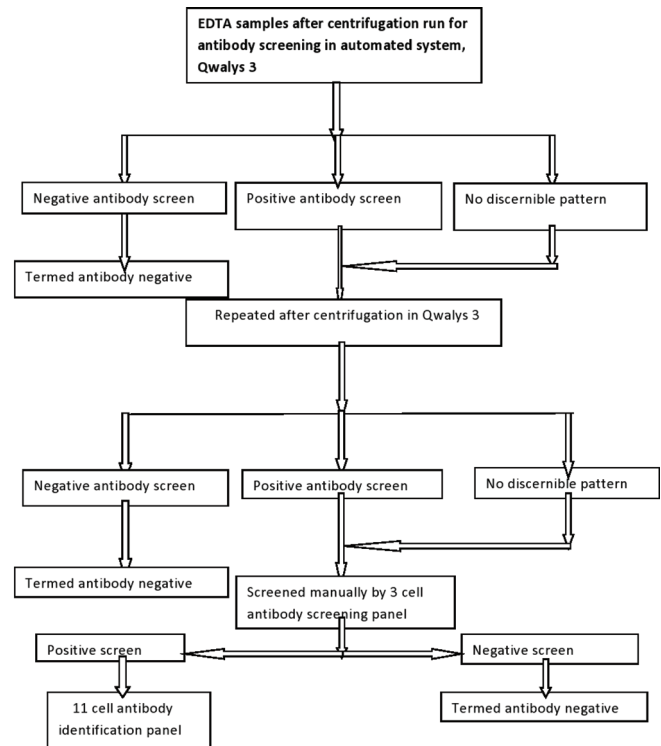


Figure 1: Flowchart showing protocol followed in this study

antibodies might have missed. Antibodies against many low-frequency antigens which were not included in antigenogram of the automated system might have missed.

To conclude, people without any history of prior red cell immunization can develop alloantibodies which may or may not be clinically significant and can also cause blood grouping discrepancies or incompatible crossmatches. These may also be clinically significant so even in individuals with no prior history of blood transfusion or pregnancy antibody screening, and crossmatching by Indirect antiglobulin test method is a must. Computer or electronic crossmatches for the samples with a negative antibody screen should be avoided unless an emergency.

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Nil.

Conflicts of interest

There are no conflicts of interest.

	Rh-hr	Spender Donor / Donneur Donateur / Donatore Donante / Dador	Rh-hr						Kell					Duffy	Kidd	Lewis	P	MNS					Luth.	Xg							
			D	C	E	c	e	C ⁺	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	P ₁	M	N	S	s	Lu ^a	Lu ^b	Xg ^a	Xg ^b		
I	CCC ^W D.ee	R ₁ ^W R ₁	129948	+	+	0	0	+	+	0	+	0	+	nt	nt	+	0	+	0	+	0	0	0	+	0	+	0	+	0	+	0
II	ccD.EE	R ₂ R ₂	612928	+	0	+	+	0	0	0	+	0	+	nt	nt	0	+	0	+	0	+	+	+	0	+	0	0	+	+	+	+
III	ccddee	rr	119450	0	0	0	+	+	0	+	+	0	+	nt	nt	0	+	+	+	0	+	+	+	0	+	0	+	+	+	+	

Figure 2: Three-cell antibody screening panel

Rh-hr	Spender Donor / Donneur Donateur / Donatore Donante / Dador	Rh-hr						Kell					Duffy	Kidd	Lewis	P	MNS					Luth.	Xg	Spez. Antigene / Special types / Antígenos part. / Otros Antígenos / Tipos especiales							
		D	C	E	c	e	C ⁺	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	P ₁	M	N	S		s	Lu ^a	Lu ^b	Xg ^a	Xg ^b		
1	CCC ^W D.ee	R ₁ ^W R ₁	894587	+	+	0	0	+	+	0	+	0	+	nt	nt	+	0	+	0	+	0	0	0	+	0	+	0	+	+		1
2	CCD.ee	R ₁ R ₁	053203	+	+	0	0	+	0	+	+	0	+	nt	nt	0	+	0	+	+	0	+	+	0	+	0	+	+	0		2
3	ccD.EE	R ₂ R ₂	235024	+	0	+	+	0	0	0	+	0	+	nt	nt	0	+	0	+	0	+	0	0	+	0	+	0	+	nt		3
4	Ccddee	r ⁺ r	002739	0	+	0	+	+	0	0	+	0	+	nt	nt	0	+	+	0	0	0	0	+	+	0	+	0	+	+		4
5	ccddEe	r ⁺ r	415472	0	0	+	+	+	0	0	+	0	+	nt	nt	+	0	+	0	0	+	+	+	0	+	0	+	nt		5	
6	ccddee	rr	856916	0	0	0	+	+	0	+	+	0	+	nt	nt	0	+	+	0	0	0	+	+	0	+	0	+	+		6	
7	ccddee	rr	303739	0	0	0	+	+	0	0	+	0	+	nt	nt	+	0	0	+	0	+	+	+	0	+	+	+	0	Co(b+)*	7	
8	ccD.ee	R ₀ r	767559	+	0	0	+	+	0	0	+	0	+	nt	0	0	+	0	0	0	+	+	+	0	+	0	+	+		8	
9	ccddee	rr	174579	0	0	0	+	+	0	0	+	+	nt	nt	0	+	0	+	0	+	0	0	+	0	+	0	+	nt		9	
10	ccddee	rr	855041	0	0	0	+	+	0	0	+	0	+	nt	nt	0	+	+	+	0	+	0	+	+	0	0	+	0		10	
11	ccddee	rr	349033	0	0	0	+	+	0	0	+	0	+	nt	nt	+	0	+	0	0	+	+	0	+	0	+	0	+		11	

Figure 3: Eleven-cell antibody identification panel

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References

- Hamilton JR, Bailey DJ. Identification of antibodies to red cell antigens. In: Fung MK, Eder AF, editors. AABB Technical Manual. 19th ed. Bethesda: AABB Press; 2017. p. 349-84.
- LacCE. Naturally Occurring Antibodies vs. Immune Antibodies. Available from: https://www.labce.com/spg1867622_naturally_occurring_antibodies_vs_immune_antibodies.aspx. [Last accessed on 2019 Nov 08].
- Storry JR. Other protein blood groups. In: Simon TL, McCullough J, editors. Rossi's Principle of Transfusion Medicine. 11th ed. Oxford: Wiley-Blackwell; 2016. p. 185-92.
- Tondon R, Kataria R, Chaudhry R. Anti-M: Report of two cases and review of literature. Asian J Transfus Sci 2008;2:81-3.
- Coghlan G. Antibodies to Low incidence antigens. Transfus Apheresis Sci 2009;40:199-202.

6. Ito K, Mastuo M. A further example of a probably-naturally-occurring anti Kell (KI) found in Japanese female donor. *J Japan Soc Blood Transfus* 1980;26:299-300.
7. Garg N, Sharma T, Singh B. Prevalence of irregular red blood cell antibodies among healthy blood donors in Delhi population. *Transfus Apher Sci* 2014;50:415-7.
8. Klein HG, Anstee D. Other red cell antigen. In: *Mollison's blood Transfusion in Clinical Medicine*. 11th ed. Oxford: Blackwell; 2005. p. 209-52.

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