



ST VINCENT'S
HEALTH AUSTRALIA

Anti-Sd^a – A case study

Sofia Plymin
St. Vincent's Hospital Melbourne

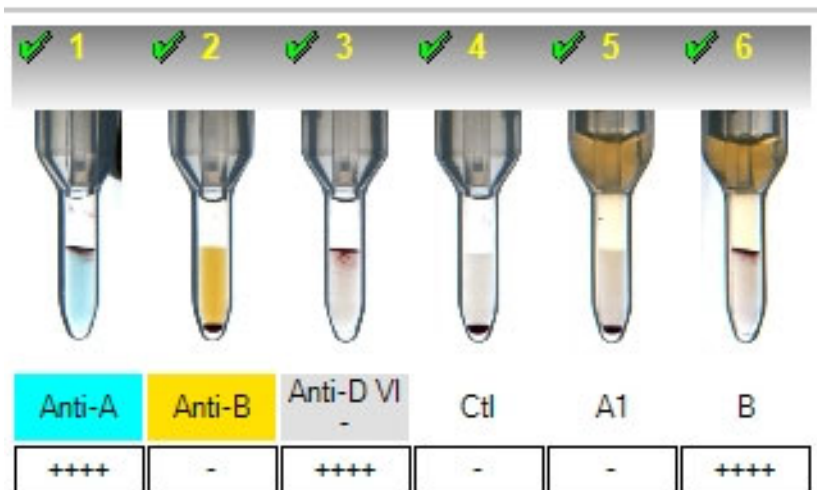
NICE
Launceston 2018

Clinical Notes

- 28 year old female
- 12 weeks pregnant
- Blood group and antibody screen requested through GP

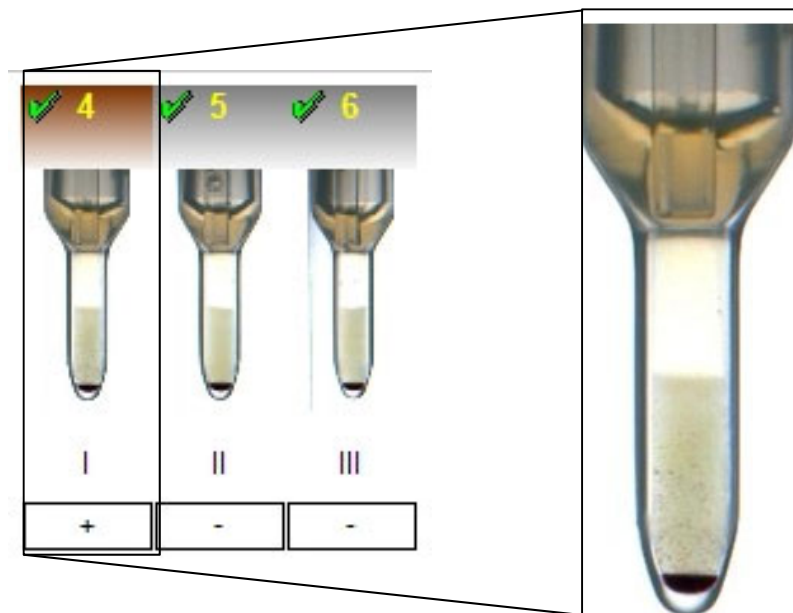
Findings

Blood Group



A Rh(D) Positive

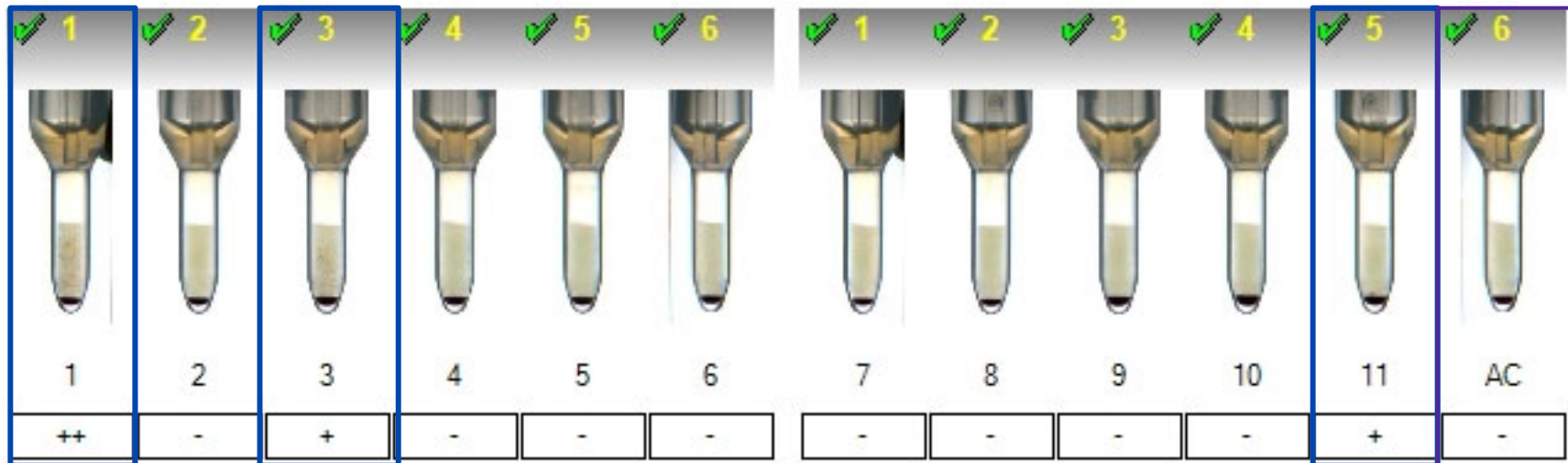
Antibody Screen



Positive

Findings

Phenocell B panel performed by Diamed Liss/Coombs CAT



- Finely granular reactions

- Negative auto control

Findings

Phenocell B panel performed by Diamed Liss/Coombs CAT

Phenocell B 0.8% Antigen Composition Sheet																		Batch No: 2653 181										Expiry Date: 02/10/2018			
Cell No	Reference No	RH							KEL			FY		JK		MNS				P1PK	LE		LU	Additional Typings	Cell No	Results					
		Rh Phen.	D	C	E	c	C ^w	K	k	Kp ^a	Fy ^a	Fy ^b	Jk ^a	Jk ^b	M	N	S	s	P1	Le ^a	Le ^b	Lu ^a									
1	2170164	R ₁ ^w R ₁	+	+	0	0	+	+	0	+	0	+	+	+	0	+	0	0	+	0	0	+	0		1	2H/1000 -					
2	5115543	R ₁ R ₁	+	+	0	0	+	0	+	0	0	+	+	0	+	0	+	0	+	+	0	0		2	2+						
3	5566800	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	0	+	0	+	+	+	+	+	0	0	0		3	14					
4	4125085	R ₂ R ₂	+	0	+	+	0	0	0	+	0	+	0	+	0	+	0	+	+	+	0	0	0		4	0					
5	4398907	R ₂ R ₂	+	0	+	+	0	0	0	+	0	0	+	0	+	0	+	0	+	+	0	+	+		5	0					
6	5961888	r'r	0	+	0	+	+	0	0	+	+	+	0	+	0	+	0	+	+	+	+	0	0		6	0					
7	2228735	r''r	0	0	+	+	+	0	0	+	0	0	+	+	0	0	+	+	0	0	0	+	+		7	0					
8	2111482	rr	0	0	0	+	+	0	+	+	0	+	0	0	+	+	+	0	+	0	0	+	0		8	0					
9	2054546	rr	0	0	0	+	+	0	0	+	+	0	+	+	+	0	+	0	+	0	0	+	0		9	0					
10	5152135	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	+	0	+	0	0	+	0		10	0					
11	2155998	rr	0	0	0	+	+	0	0	+	0	0	+	0	+	+	0	+	+	+	0	0	0		11	1+					
Auto																								Auto	0						

- Patient is R2r K-. Could it be anti-C? + ???

Findings

Papainised panel performed by NaCl CAT

Rh-hr	Möglicher Genotyp Probable Genotype Genotipo probable Probabile genotipo Genotipo provável	Spender Donor Donneur Donatore Donante Dador	Rh-hr						Kell						Duffy		Kidd		Lewis		P	MNS				Luth.		Xg		Spez. Antigene Special types Antígenos part. Antigeni particolari Otros Antígenos Tipos especiais	Resultat/Result/ Résultat/Risultato/ Resultado/Resultado			
			D	C	E	c	e	C ⁺	K	k	Kp ^a	Kr ^a	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b		F ₁	M	N	S	s	Lu ^a	Lu ^b	Xg ^a		Xg ^b	♀ ♂	USS/ Coombs	Enzyme
1	CCC ^w D.ee	R ₁ ^w R ₁	240365	+	+	0	0	+	+	0	+	0	+	nt	nt	+	0	+	0	0	+	+	0	+	0	+	0	+	+			1		
	CCD.ee	R ₁ R ₁	063714	+	+	0	0	+	+	+	+	0	+	nt	nt	0	+	0	+	0	0	+	+	0	+	+	0	+	0			2		
3	ccD.EE	R ₂ R ₂	595723	+	0	+	+	0	0	0	+	0	+	nt	nt	+	+	0	+	0	+	+	0	+	0	+	0	+	+			3		
4	Ccddee	r ⁺ r	081303	0	+	0	+	+	0	0	+	+	+	nt	nt	0	+	0	+	0	+	+	+	0	+	0	0	+	+			4		
5	ccddEe	r ⁺ r	437734	0	0	+	+	+	0	0	+	0	+	nt	nt	0	+	+	0	0	+	0	+	0	+	0	+	+	+			5		
6	ccddEE	rr	536002	0	0	0	+	+	0	+	+	0	+	nt	nt	+	0	+	0	0	+	+	+	+	+	0	0	+	+			6		
7	ccddEE	rr	452419	0	0	0	+	+	0	0	+	0	+	nt	nt	0	+	0	+	0	+	+	0	+	0	+	0	+	+			7		
8	ccD.ee	R ₀ r	706352	+	0	0	+	+	0	0	+	0	+	nt	nt	0	0	+	+	+	0	+	+	+	+	0	0	+	+			8		
9	ccddEE	rr	038226	0	0	0	+	+	0	0	+	0	+	nt	nt	+	0	0	+	0	0	+	+	0	+	+	0	+	+			9	+	-
10	ccddEE	rr	356070	0	0	0	+	+	0	0	+	0	+	nt	nt	0	+	+	0	+	0	0	+	+	0	+	0	+	+			10		
11	ccddEE	rr	127894	0	0	0	+	+	0	0	+	0	+	nt	nt	+	0	+	0	0	+	+	0	+	+	0	0	+	0			11		
Patient/Patient/Patient/Paziente/Paciente/Paciente																											Eigenkontrolle/Autocontrol/ Autocontrol/Autocontrol/ Autocontrol/Autocontrol							

- Finely granular reaction in one cell

Findings

No reactions seen in:

- Grifols Perfect Panel by Manual Diamed LISS/Coombs CAT
- Saline room temperature/37°C/IAT Phenocell C 3% panel
- PEG IAT panel

Red Cell Reference Laboratory Report

Clinical notes: Pregnant.

GROUP: A Rh(D): Positive

Note: Insufficient sample to perform reverse group.

PHENOTYPE: C-E+c+e+(probable R2r), K-, Fy(a+b-), Jk(a+b+), M+S+s+.

DAT: Negative.

PLASMA: Anti-Sda very weakly reactive (score 3) with occasional panel cells by PEG-IAT, BioRad LISS/Coombs cards and enzyme technique. The plasma reacted very strongly (score 12) with a known strong Sda+ cell showing mild mixed field reactions.

No other antibodies, including anti-C and anti-Bg/HLA antibodies, were detected by saline 22°C, PEG-IAT and BioRad LISS/Coombs cards.

Red Cell Reference Laboratory Report

Comments:

The plasma sample [REDACTED] contains anti-Sda. Anti-Sda is an uncommon finding, we rarely encounter it in our reference work. The expression of the Sda antigen varies enormously amongst individuals but it is reported that approximately 4% of individuals are truly Sd(a-). There is an increased frequency of Sd(a-) red cell phenotype amongst pregnant women. Anti-Sda is usually an IgM antibody although some may be IgG. There are 2 reports in the literature of anti-Sda causing haemolytic transfusion reactions with transfusion of Sd(a++) red blood cells. Anti-Sda has not been reported to cause HDFN.

Sd^a antigen

- First described in 1967 - Macvie and Renton simultaneously
- Biosynthetic enzyme is β 1,4-N-acetylgalactosaminyltransferase 2
- Classified in the 901 series of high frequency antigens
 - ISBT 901011
- Not yet a blood group system as gene has not been fully elucidated

Sd^a antigen



- Strength of expression is continuous
- At birth, newborns are Sd^{a-}
- A transient Sd^{a-} phenotype can be seen in pregnancy

Anti-Sd^a

- Mostly IgM, however IgG has also been reported
- Shows characteristic 'mixed-field reaction'
 - Small agglutinates in sea of free cells
 - Unagglutinated cells retested with anti-Sd^a: same mixed-field reaction noted
- Sd^a antigen can be found in high concentrations in saliva and urine
 - Urine can be used to neutralise anti-Sd^a if it is interfering with antibody investigations

Anti-Sd^a : In the context of pregnancy

- Clinically insignificant
- No reported cases of Haemolytic Disease of the Foetus and Newborn
- Reported cases of Haemolytic Transfusion Reactions

References

- Daniels G. *Human Blood Groups*. 3rd edn. Wiley-Blackwell; 2013.
- Macvie S, Morton J, Pickles M. *The Reactions and Inheritance of a New Blood Group Antigen, Sd^a*. Vox Sanguinis. 1967;13:485-492
- Renton P, Howell P, Ikin E, Giles C, Goldsmith K. *Anti-Sd^a, A New Blood Group Antibody*. Vox Sanguinis. 1967;13:493-501