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Interactive anti-G Presentation

Martin Maley – RCI Newcastle

NEQAS/BBTS 26/11/19

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Anti-G

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Anti-G

What to call it then?

- Anti-D + C but not
- The antibody formerly known as anti-D+C
- Anti- 
- www.renamethatantibody.com
- Ok then, it stays anti-G

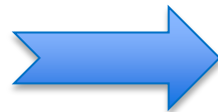
Facts about anti-G

- Rh Blood group system
- If the red cells are D+, and/or C+, they should be presumed G+
- There are very rare exceptions

Phenotype	Shorthand	Can develop
D+ C- G+ E-	R_0r / R_0R_0	anti-C only
D+ C- G+ E+	R_2r / R_2R_2	anti-C only
D+ C+ G+ E+/-	Many!	None
D- C+ G+ E-	$r'r/r'r'$	anti-D only
D- C- G- E-	rr	any combination of anti-D/C/G

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D- C- G- E-	rr	any combination of anti-D/C/G

Antigen Strength

Not all antigen positive RBCs express the same level of antigen

Phenotype	D	C	G
R1R1	+++	+++++	+++++
R2R2	+++++	-	+
r'r	-	+++	+++

Important to keep in mind
when comparing reaction strengths on the
ABID panel

How not to do it...

Case study 1

Antenatal, 12 weeks gestation, new patient.

‘Anti-D+C for quant’

Apparent anti-D+C on panelling, no variation in strength of reaction (see later)

Anti-D quant 1.0 IU/mL, Anti-C titre: 4

Cell	Rh	Rh						Gel card results			
		D	C	E	c	e	C ^w	IAT	Enz/IAT		
1	R ₁ ^w R ₁	+	+	0	0	+	+	5	5		
2	R ₁ R ₁	+	+	0	0	+	0	5	5		
3	R ₂ R ₂	+	0	+	+	0	0	5	5		
4	r'r	0	+	0	+	+	0	5	5		
5	r''r	0	0	+	+	+	0	0	0		
6	rr	0	0	0	+	+	0	0	0		
7	rr	0	0	0	+	+	0	0	0		
8	rr	0	0	0	+	+	0	0	0		
9	rr	0	0	0	+	+	0	0	0		
10	rr	0	0	0	+	+	0	0	0		
Auto								0	0		


How not to do it...

- At this stage we have no idea, not only which antibodies are present, but also whether they are alloantibodies, and what their true levels are.
- Reported as anti-D+C
- Both as 'allo' antibodies
- No prophylaxis advice
- Unprinted comments on record – indicating to do anti-G investigation next time, as insufficient this time.


How not to do it part 2...

- 2nd sample in pregnancy 4 weeks later
- Same results obtained
- Same quantification (no titre done)
- Same report
- Unprinted comment this time **“PLEASE ENSURE G INVESTIGATION DEFINITELY GETS DONE NEXT TIME”**


How not to do it part 2...

- We now have 2 potentially incorrect reports
 - 2 sets of 'alloantibodies' but maybe not
 - 2 potential opportunities missed to remind of the need for prophylaxis
 - And it is putting off the inevitable...
- 

How to finally do it (too late)

- 3rd sample in pregnancy 4 weeks later
 - Same results obtained
 - Same quantification
 - Anti-G investigation done this time
- 

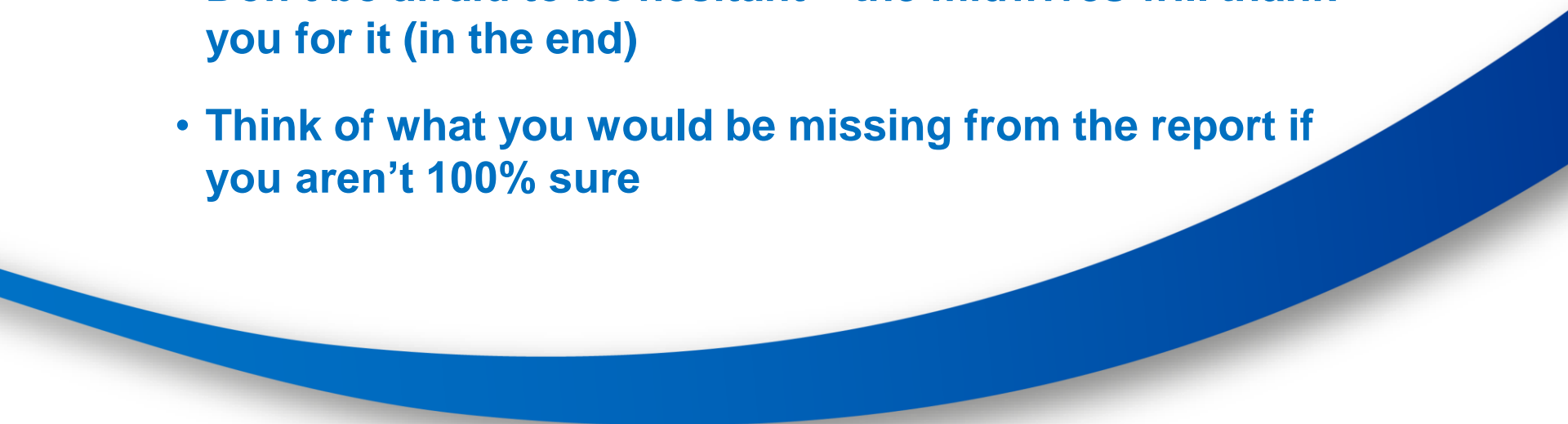
Anti-G Investigation

- It is actually an anti-D investigation!
 - Adsorb patient plasma with r'r cells (D-, C+, G+)
 - Removes any anti-C+G
 - Leaves any anti-D
 - Repeat ABID and quant on adsorbed plasma
- 

How to finally do it...

- All results on neat plasma unchanged
- Results of adsorbed plasma tests;
- No anti-D detected by IAT
- ReQuant: <0.1 IU/mL
- Did someone say root cause analysis
- Ironically the one thing people hate more than anti-G

Lessons Learned from Case 1

- If you're not sure which antibodies are there it probably needs more work
 - Don't commit when it's clear you've not completed the investigation
 - Don't be afraid to be hesitant – the midwives will thank you for it (in the end)
 - Think of what you would be missing from the report if you aren't 100% sure
- 

When to actually do it – case 2

Cell	Rh	Rh						Gel card results			
		D	C	E	c	e	C ^w	IAT	Enz/IAT		
1	R ₁ ^w R ₁	+	+	0	0	+	+	5	5		
2	R ₁ R ₁	+	+	0	0	+	0	5	5		
3	R ₂ R ₂	+	0	+	+	0	0	3	5		
4	r'r	0	+	0	+	+	0	5	5		
5	r''r	0	0	+	+	+	0	0	0		
6	rr	0	0	0	+	+	0	0	0		
7	rr	0	0	0	+	+	0	0	0		
8	rr	0	0	0	+	+	0	0	0		
9	rr	0	0	0	+	+	0	0	0		
10	rr	0	0	0	+	+	0	0	0		
Auto								0	0		

Remember

Pheno	D	C	G
R ₁ R ₁	+++	++++	++++
R ₂ R ₂	++++	-	+
r'r	-	+++	+++



When to actually do it – case 3

Cell	Rh	Rh						Gel card results			
		D	C	E	c	e	C ^w	IAT	Enz/IAT		
1	R ₁ ^w R ₁	+	+	0	0	+	+	5	5		
2	R ₁ R ₁	+	+	0	0	+	0	5	5		
3	R ₂ R ₂	+	0	+	+	0	0	0	5		
4	r'r	0	+	0	+	+	0	5	5		
5	r''r	0	0	+	+	+	0	0	0		
6	rr	0	0	0	+	+	0	0	0		
7	rr	0	0	0	+	+	0	0	0		
8	rr	0	0	0	+	+	0	0	0		
9	rr	0	0	0	+	+	0	0	0		
10	rr	0	0	0	+	+	0	0	0		
Auto								0	0		

Remember

Pheno	D	C	G
R ₁ R ₁	+++	++++	++++
R ₂ R ₂	++++	-	+
r'r	-	+++	+++



When to actually do it – case 4

Cell	Rh	Rh					
		D	C	E	c	e	C ^w
1	R ₁ ^w R ₁	+	+	0	0	+	+
2	R ₁ R ₁	+	+	0	0	+	0
3	R ₂ R ₂	+	0	+	+	0	0
4	r'r	0	+	0	+	+	0
5	r''r	0	0	+	+	+	0
6	rr	0	0	0	+	+	0
7	rr	0	0	0	+	+	0
8	rr	0	0	0	+	+	0
9	rr	0	0	0	+	+	0
10	rr	0	0	0	+	+	0
Auto							

Gel card results			
IAT	Enz/IAT		
5	5		
5	5		
5	5		
1	5		
0	0		
0	0		
0	0		
0	0		
0	0		
0	0		
0	0		

Remember

Pheno	D	C	G
R ₁ R ₁	+++	++++	++++
R ₂ R ₂	++++	-	+
r'r	-	+++	+++




Lessons Learned from Cases 2, 3 and 4

- On presentation, on all women of childbearing potential should be considered for an anti-G investigation;
- Cells 3 (R2R2) and 4 (r'r) on panel are pivotal
- If cell 3 is equal to or weaker than cell 4, it needs a G invest
- Only if cell 3 is stronger than cell 4 can you be sure anti-D is the predominate antibody


Reporting of Anti-G Cases



Reporting Anti-G Cases

- Considerations;
 - Are the antibodies 'allo'?
 - Anti-D level, Adsorbed (r'r) level, Adsorbed (Ro) level,
 - Anti-C/G titre, anti-C titre, anti-G titre
 - Rises in antibody level
 - Quote neat or adsorbed anti-D
- 

Reporting Anti-G Cases

- Prophylaxis recommendations,
 - Sampling requirements
 - Antibody card
 - Referral to Fetal Medicine advice
 - Telephone advice given
 - Incomplete investigation
 - Partner request / results
- 

Summary

- **Do not report anti-D+C in a woman of childbearing potential until you have either;**
 - **Definitely decided the case doesn't need an anti-G invest, or...**
 - **You've actually done an anti-G investigation.**
 - **Ask for help / talk about it**
 - **They are not easy to report – compile / read with care.**
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