Anti-G Antibody Why do we care?

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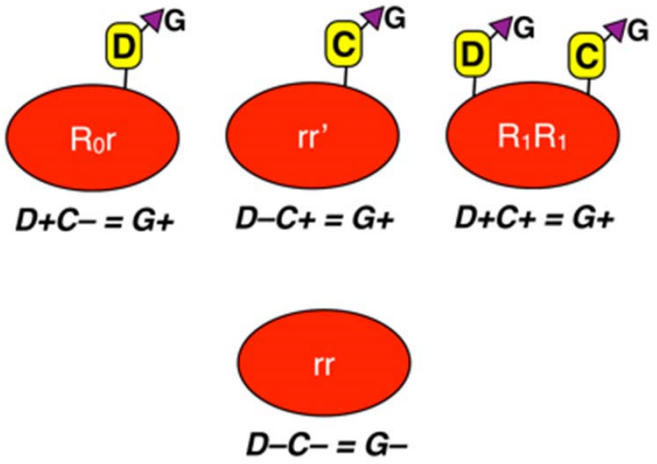
What is the G Antigen?

- Part of the Rh blood group
- Most clinically significant Rh antigens: D, C, E, c and e
- G antigen present on RBC that are either D+, C+ or both
- Prevalence of approx 83%



Taken from Chaffin, J. (2016). "So you want to be a "G-Wizz?"." http://www.bbguy.org/blog/.

What is the anti-G antibody?

- IgG antibody produced against G antigen
- Developed after a sensitising event
- Presents as anti-D+C on an antibody ID
- Can be clinically significant
- Not always necessary to identify
- Why do we care?

Anti-G in Pregnancy

- Differentiating Anti-G from anti-D+C is important in pregnancy
- Differentiation will determine whether or not to administer anti-D prophylaxis (RhIG)

Anti-D+C caused by:	RhIG Indicated?
Anti-D+C or Anti-D+G	**No**
Anti-G or Anti-C+G	**Yes**

Suspecting/Identifying Anti-G

- Suspect if:
  - Anti-D+C on antibody ID
  - Titre of anti-C is higher than anti-D
- Identify antibodies by a process of adsorption and elution
- Often performed by reference laboratory

Case 1 - 34 yr female – CF

Anti D+C

Anti-D titre 1:32 Anti-C titre 1:4

Rh	D	C	c	E	e	Patient
R1R1	+	+	0	0	+	3+
R1R1	+	+	0	0	+	3+
R1wR1	+	+	0	0	+	4+
R2R2	+	0	+	+	0	4+
R2R2	+	0	+	+	0	4+
r'r	0	+	+	0	+	2+
r"r	0	0	+	+	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0

Neonate: O RhD Neg DAT Neg

Case 2 - 26 yr female – JG

Anti D+C+G

Anti-D titre 1:2 Anti-C/G titre 1:16

Rh	D	C	c	E	e	Patient
R1R1	+	+	0	0	+	2+
R1R1	+	+	0	0	+	2+
R1wR1	+	+	0	0	+	2+
R2R2	+	0	+	+	0	2+
R2R2	+	0	+	+	0	2+
r'r	0	+	+	0	+	2+
r"r	0	0	+	+	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0

Neonate Condition Unknown

Case 3 - 34 yr female – MP

Anti G+C

O RhD Neg

Anti-G titre 1:2 Anti-C titre 1:4

Rh	D	C	c	E	e	Patient
R1R1	+	+	0	0	+	2+
R1R1	+	+	0	0	+	2+
R1wR1	+	+	0	0	+	2+
R2R2	+	0	+	+	0	2+
R2R2	+	0	+	+	0	2+
r'r	0	+	+	0	+	2+
r"r	0	0	+	+	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0

Prophylactic Anti-D: 28, 34 weeks and post partum

Case 3 – Neonate – A RhD Pos

DAT: Pos Eluate: Anti G+C+A

Mildly elevated Bilirubin

No treatment required

Hb: 160 g/L (150-220) on discharge

Day	Time	Bilirubin	Ref Range
1	23:45	**100**	<85 umol/L
2	10:58	**131**	<150 umol/L
3	11:18	**190**	<200 umol/L
4	11:49	**236**	<200 umol/L
5	10:54	**234**	<200 umol/L

Case 4 - 34 yr female – CF

Anti G+C

Anti-G titre 1:2 Anti-C titre 1:4

Rh	D	C	c	E	e	Patient
R1R1	+	+	0	0	+	3+
R1R1	+	+	0	0	+	3+
R1wR1	+	+	0	0	+	3+
R2R2	+	0	+	+	0	2+
R2R2	+	0	+	+	0	2+
r'r	0	+	+	0	+	3+
r"r	0	0	+	+	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0
rr	0	0	+	0	+	0

Neonate: O RhD Neg DAT Neg

Comparison

All show D+C picture

Rh	D	C	c	E	e	Patient 1 D + C	Patient 2 D + C + G	Patient 3 G + C	Patient 4 G + C
R1R1	+	+	0	0	+	3+	2+	2+	3+
R1R1	+	+	0	0	+	3+	2+	2+	3+
R1wR1	+	+	0	0	+	3+	2+	2+	3+
R2R2	+	0	+	+	0	4+	2+	2+	2+
R2R2	+	0	+	+	0	4+	2+	2+	2+
r'r	0	+	+	0	+	2+	2+	2+	3+
r"r	0	0	+	+	+	0	0	0	0
rr	0	0	+	0	+	0	0	0	0
rr	0	0	+	0	+	0	0	0	0
rr	0	0	+	0	+	0	0	0	0
rr	0	0	+	0	+	0	0	0	0

Take home message

- Considered best practice to administer anti-D prophylaxis to all D-negative women with no immune anti-D antibodies at 28 and 34 weeks of pregnancy.

- It is important to differentiate anti-G from anti-D+C in all pregnancies to ensure appropriate prophylaxis is given if necessary

Acknowledgments

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