Discrimination of Anti-G in an Obstetric Patient

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INTRODUCTION

- G antigen
  - present on most D-positive and all C-positive RBCs.
- Anti-G
  - Mimics appearance of anti-D plus anti-C
  - First described by Allen &Tippett in 1958
  - A rr person received D+C-E-c+e+ RBCs and produced an antibody that appeared to be anti-D plus anti-C
  - Developed in pregnancy or transfusion event
  - Important to confirm in obstetric patients

Anti-G in Obstetric Patients

- Possible cause of haemolytic disease of fetus and newborn (HDFN)
- Confirmation of the presence or absence of anti-D
  - Presence of anti-D will exclude the need for administration of prophylactic anti-D immunoglobulin
  - Absence of anti-D means the course of immunoglobulin would protect the mother from forming anti-D antibody
- Sequential adsorption and elution techniques are used for the detection and identification of the antibody

Case Study

- Patient History:
  - 45 year old female planning her fourth pregnancy
  - Historical result: anti-D+C ?anti-G
  - Patient had a new partner (ccDEe) and was consulting a fertility clinic

RCRL - ABO, Rh(D) and Phenotype

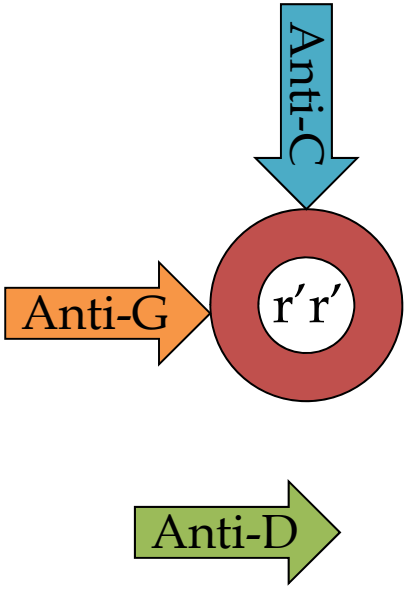
Method	Anti-A	Anti-B	Anti-AB	Anti-D	Ctrl	A_1	A_2	B	O
Tube IS	4+	0	4+	0	0	0	0	4+	0

- Group: A
- Rh(D): Negative
- Phenotype: ce, C-D-E- ;G-; K-; Fy(a+b+); Jk(a+b-); S-s+

RCRL – Antibody Identification

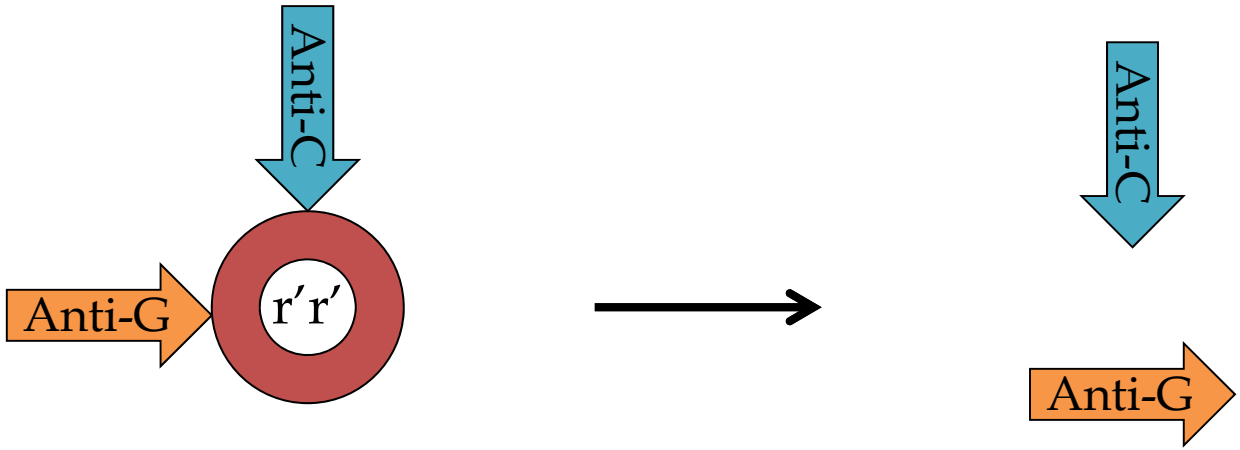
Cell	1	2	3	4	5	6	7	8	9	Auto
Phenotype	r'r'	R_0r	r'r	R_0r	r'r	rr	rr	rr	rr	rr
30min SAL RT	2+	1+	1+	1+	1+	0	0	0	0	0
PEG IAT	3+	3+	4+	3+	4+	0	0	0	0	0

RCRL – First Adsorption

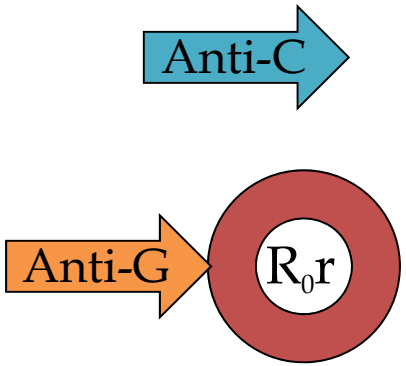


Cell	1	2	3	4	5	Auto
Phenotype	r′r′	R_0r	r′r	R_0r	r′r	rr
PEG IAT of 1st absorbed serum	0	1+	0	1+	0	0

RCRL – First elution

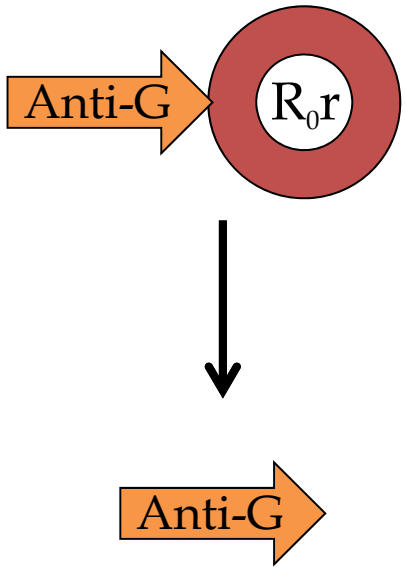


RCRL –Second Adsorption



Cell	1	2	3	4	5	Auto
Phenotype	r'r'	R_0r	r'r	R_0r	r'r	rr
PEG IAT of 2nd adsorbed serum	1+s	0	2+	0	1+s	0
Last wash	0	0	0	0	0	0

RCRL –Second Elution



Cell	1	2	3	4	5	Auto
Phenotype	r'r'	R_0r	r'r	R_0r	r'r	rr
PEG IAT of 2nd elution	1+s	1+s	2+	2+	2+	0
Last wash	0	0	0	0	0	0

CONCLUSION

- The presence of anti-D,-G and Anti-C were confirmed by PEG adsorption and elution studies
- Anti-D quantitation was performed and reported with a clinically significant result
- It enabled the referring obstetrician to determine the significance of this result and monitor the potential possibility and severity of HDFN
- The patient will not require prophylactic anti-D immunoglobulin

REFERENCES

- Daniels, G, 2013, *Human Blood Groups*, 3rd ed, Wiley-Blackwell, UK
- Joe Chaffin 2016, *So You Want to be a "G-Wiz?"*, Blog, Immunohematology, viewed 24 July 2018, https://www.bbguy.org/2016/06/17/want-g-wiz/