Sheffield Teaching Hospitals NHS
NHS Foundation Trust

Complicated antibodies in pregnancy.

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Patient history

- 30 year old female from Doncaster (2012)
- 20/40
  - Hb 39
  - A pos, neg screen
  - Transfused 3 units
- 28/40
  - Pos screen (+/+)
  - RCI found
    - Anti-E (titre 4), Anti-C^w (neat)
    - Pan reactive auto antibody (DAT 1+)
    - ccDee K neg (?Ro)

Patient history

- 37/40
  - Anti-E & C^w
  - Unable to titre due to strong pan reactive auto antibody
  - DAT 5+
  - Adsorption revealed possible Anti-C
- 40/40
  - Delivered at term
  - Unknown baby group and DAT
  - No evidence of HDN report

Patient history

- 2014 –Doncaster
  - Hb 60
  - A pos
  - Pos screen
  - Serology unclear
- RCI results
  - Anti-E, Anti-Cw and pan reactive unidentified antibody
  - Kp (a-/b+), Fy (a-/b-), Lu (a-)
  - Samples requested for IBGRL
- Patient treated with IV iron and sent home

Pregnancy (2015)

- Booked at Doncaster
- A pos
- Pos screen (+/+)
- Samples sent to IBGRL
  - Anti-E
  - Anti-C^w
  - Anti-Hr
  - Anti-hr^s

- And found to be a D variant as well (DAR1)!

DAR1

- D variant
- Relatively common in African population[1]
- Most reagents in labs will group as Rh D positive
- Treat as Rh D neg
- Patients grouped as DAR1 can make anti-D
- Advised to give prophylactic anti-D

- Partner also tested
  - Also a D variant – DAU-6

Anti-Hr and Anti-hr^s

- Hr antigen present on all RBC except;
  - Rh_{null}
  - -D-/-D-
  - rare e+ cells that lack hr^s antigen (about 1% of black South Africans)

- Anti-hr^s (Shabalala) was first discovered in 1960 in Mrs Shabalala, a South African Black woman[2]
- It is an allo anti-e like antibody found in people who are e+.

- Patient's phenotype ccDee

- Anti-Hr can cause HDFN (IgG)

- Blood extremely difficult to get hold of
- No suitable fresh RBC in the UK
- Needed to use the NFBB

Back to the pregnancy

- 28/40
  - Anti-E, -Cw, -Hr, -hr^s Unable to determine accurate levels of anti-Hr and –hr^s but it was indicated that the levels were high
  - Risk of HDFN
- 30/40
  - Now detecting prophylactic anti-D as well
  - Again unable to determine accurate levels of anti-Hr and –hr^s
  - Risk of HDFN
- 32/40
  - Transferred to Jessops hospital
- 35/40
  - Mid cerebral artery Doppler done
  - Vmax greatly raised
  - Suggested fetal anaemia
- 36/40
  - Planned C-section

Maternal haemorrhage plan

- ABO, Rh and K matched RBC
- Cell salvage
- Methylpredisolone cover
- Any reaction to be treated with IV IgG

Neonatal exchange

- 2 units of blood requested to be on site for possible exchange or top up transfusion at birth.

- No suitable fresh RBC in the UK
- NFBB in Liverpool had 2 units of -D-/-D-
  - 1 UK unit (48 hr expiry)
  - 1 Japanese unit (24hr expiry)

- Logistics were tricky
  - Reconstitution time
  - Travel time

Japanese RBC

Red Book Guidelines[3] advise that there should be eye readable and UKBTS barcodes for;

- Donation number (not compatible with our LIMS)
- ABO and RhD group
- Expiry date

Japanese RBC

- Neonatal exchange;
  - HT neg for anti-A and anti-B
  - CMV neg
  - HbS neg
  - Donor history

?

- Create a compatible ISBT barcode
- Manually enter the ABO, RhD group and expiry date

Delivery

- Baby delivered safely and no need for exchange
- No maternal bleeding
- Baby had continuous phototherapy for 11 days

	Hb (g/L)	Bilirubin (umol/L)
At birth	177	26
Day 2	176	83
Day 6	148	248
Day 9	-	261
Day 14	100	184
Day 23	92	-

- Baby then moved back to Doncaster
- 4 months later – Hb = 130, Bilirubin = 9

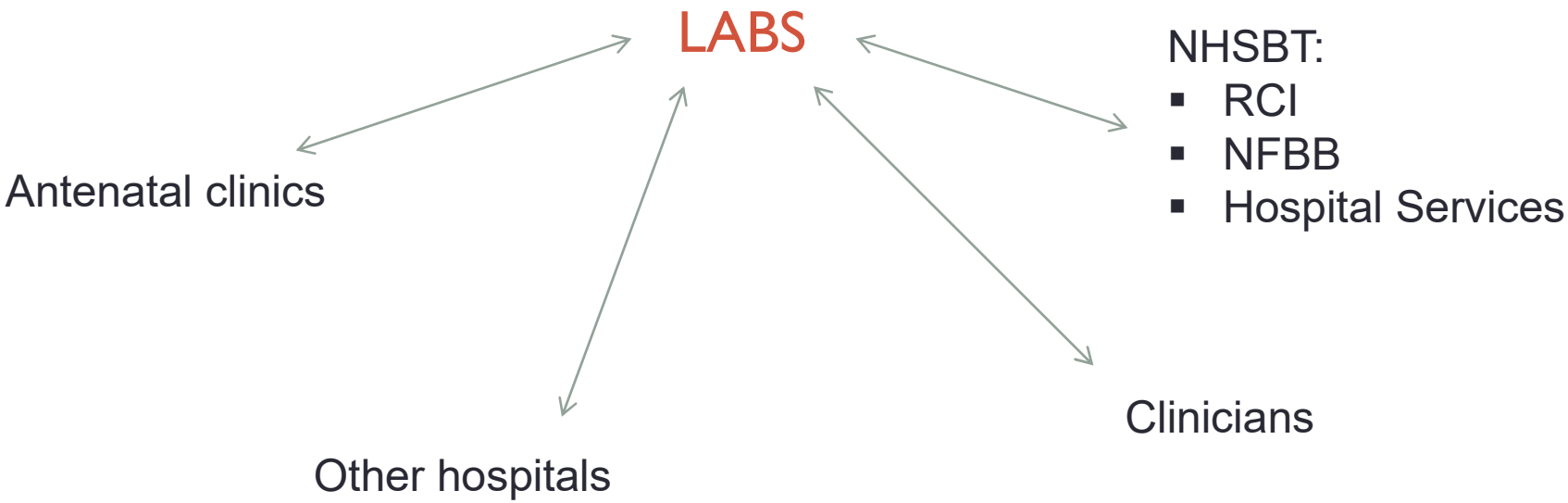
Outcome

- Baby's sample
  - Also found to be a D variant (no further testing done due to small sample)
  - DAT 4+ (IgG)
  - Eluate on the cells found only Anti-hr^s
- The units of blood
  - Neither unit was transfused in the end
  - Units returned to NHSBT and used by IBGRL due to their rare phenotype.

No blood was wasted

Conclusion

- Importance on antenatal testing
- Patient understanding and compliance
- Communication



References

1- Klein,H. and Anstee,D. (2014). *Mollinson's Blood Transfusion in Clinical* Medicine.12th ed. Wiley Blackwell, 178-179

2 - Moores,P. (1994). Rh18and hr^s Blood Groups and Antibodies. *Vox Sang.* 66(3), 225-30

3 – Guidelines for the Blood transfusion Services (Red Book). (2013). *Red Cells for exchange transfusions, leucodepleted.* 8th ed. TSO.