The appearance of Anti-D in a 4 year old apparently transfused only RhD Negative components

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Autovue results

Sample No.	A	B	D	(CG)	S1	S2	S3	(AST)
12. 0002388T	0	0	0		1	2	0	

Group O RhD Negative

Antibody screen: Positive

Not an unusual finding!

Probably an Ante-natal or Delivery Suite patient with Anti-D immunoglobulin present

Patient details

(from request form & Telepath records)

- Female child, 4 years old
- Diagnosis: ALL (May 2011)
- Previously tested x8 since Jan 2011 – antibody screen Negative on all occasions

Patient details

Transfused?

- Only 1 X ATD Platelets – 2nd June 2011

(Group O RhD Neg, apheresis, CMV Neg)

Laboratory results

IAT Panel = Anti-D (reaction strength 2+)

Auto = negative

Enzyme panel = Anti-D (strength 4+)

Questions raised

Has she received a transfusion elsewhere?

Has she been given anti-D immunoglobulin?

(e.g. to cover any RhD Pos platelets)

Further patient details

- shared care between Poole & Southampton University Hospitals Paediatrics units

Full transfusion history:

May/June 2011 @ Southampton

(on commencement of treatment)

- 2 x RCLD units & 1 ATD platelets

(all O RhD Neg)

June 2011 @ Poole

-1x ATD platelets O RhD Neg

Antibody Confirmation

Discussed with RCI Filton, Bristol (NHSBT).
Repeat samples were taken, checked that
Anti-D still detectable, and sent onwards:

RCI results

Anti-D detected reacting by IAT & Enzyme techniques

Quantitation < 0.1IU Anti-D/ml

Further RCI results

- Ruled out Anti-LW
- Ruled out Anti-G
- Could it be possible that one of the donors from the two platelets or two red cell units transfused may actually be a Dvariant?

Next steps

- The donation numbers of the four components transfused were sent to NHSBT
- Four separate donors were traced & samples taken to investigate RhD status
- Samples tested for all 10 exons of RHD gene by PCR at IBGRL

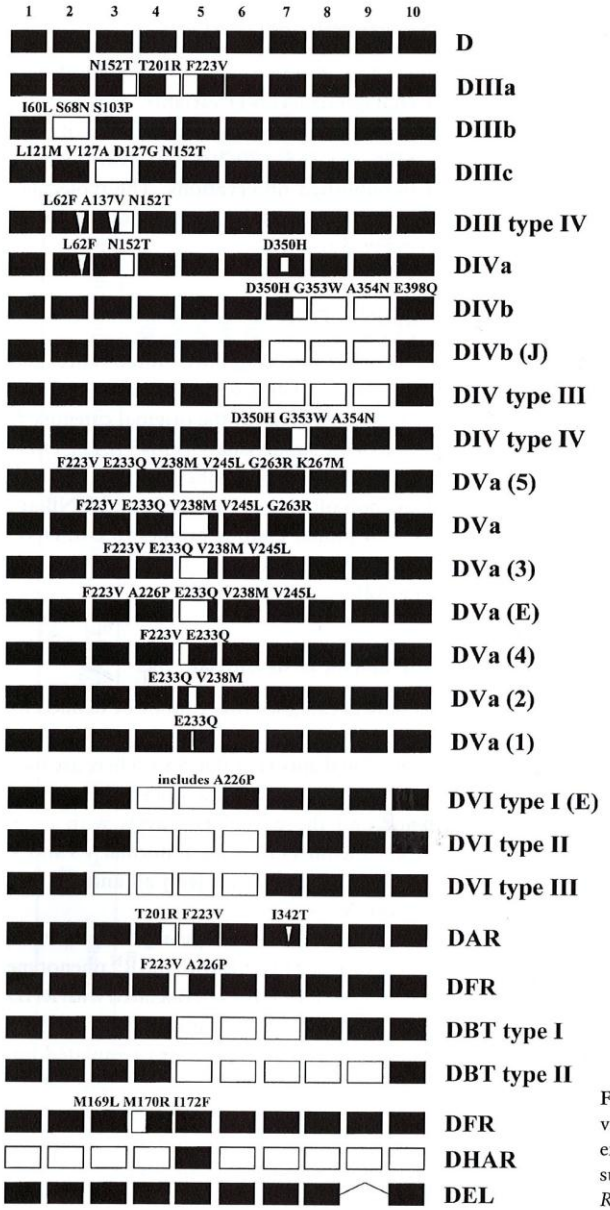

Fig. 5.6 Representation of some genes responsible for variant D antigens. ■, exons derived from *RHD*; □, exons derived from *RHCE*. ▽, untemplated amino acid substitutions. All these genes are usually paired with *RHCE*, except *DHAR*.

Extracted from; Human Blood Groups, Second Edition, Geoff Daniels

Results

All four donors demonstrated complete deletion of all 10 exons of the RHD gene

Therefore all four were true RhD Negatives, with no possibility of our patient being transfused a Dvariant (RhD Pos) component.

Also – the donor red cells did not react with patient's plasma by IAT or enzyme techniques

Further questions

Child has ALL, has she been treated with any other human products?

(Review 1999 - IV Immunoglobulin infusions may be contaminated with blood group antibodies)

Although scheduled to receive Herpes Zoster Ig, our patient did not require it.

Any other explanations?

Could this be an example of ‘naturally occurring’ Anti-D?

Only 3 papers published 1972,1987,1991;

- *Several examples of naturally occurring Rh antibodies*
- *one case of naturally occurring Anti-D + Fya + Lea, in a non-transfused patient (Contreras et al)*

Naturally occurring Rh antibodies

- Most cases were detected reacting by enzyme techniques only
- Only 2 cases previously reported of naturally occurring IAT Anti-D; both were male
- None had been transfused
- The male patient with multiple naturally occurring antibodies exhibited established risk factors of ‘infections’ and ‘malignancy’

Our patient

- Antibody reacting by IAT, still detectable at six months
- Young female; has been transfused
  (but no further transfusions since 2011)
- Responding well to treatment for ALL but has exhibited both established risk factors of ‘recurrent infections’ & ‘malignancy’

More questions than answers

- Is this the first case of naturally occurring IAT Anti-D in a young female patient?

- Will there be any long term problems for this patient if she becomes pregnant with an RhD Pos baby in adult life?

(Evidence that IAT naturally occurring Anti-D did cause red cell destruction in the 2 males when transfused RhD Pos cells – *Contreras et al*)

Future involvement

- Parents have been issued with an antibody card for child, and medical staff have explained the situation – she has not been transfused with the ‘wrong blood’
- Continue to check for antibody on a regular basis (every six months)
- Monitor carefully during any future pregnancy