Rh typing Discrepancy

Grace Lee, MT(AMT),SBB(ASCP)
American Red Cross IRL
Southern Region

American Red Cross

Feel like this donkey…..

Patient History

- Sample referred to IRL for resolution of positive antibody screen and positive DAT; crossmatch for 2 units requested.
- Patient is 46 y/o female scheduled for hysterectomy. History of previous transfusion with rbcs 5 months ago.
- Hospital types the patient as O Rh neg.

IRL Initial ABO/Rh and DAT Results

	Anti-A	Anti-B	Anti-D (IS)	Rh control (IS)	A_1 cells	B cells	DAT Poly AHG	DAT Anti-IgG	DAT Anti-C3
Patient	0	0	4+	0	4+	4+	w+	w+	0✔

An unexpected discrepancy

How is this possible?

- Called Blood Bank to double-check Rh type. Blood Bank confirmed that patient typed as Rh negative, but:
  - They do not perform test for weak D antigen ("Du test")
  - Anti-D from a different manufacturer was used for testing

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Additional Rh testing

	Anti-D			Rh Control		
	IS	37	IAT	IS	37	IAT
Manuf #1	4+	NT	NT	0	NT	NT
Manuf #2*	0	+w	3+	0	0	0 ✔

**Patient's rbcs were treated with EDTA Glycine-Acid (EGA) to remove IgG prior to testing.*

Anti-D testing

Our testing demonstrated that patient is D positive, but why are the results so different?

- Weak D (or “Du pos”) was originally described in 1946 to describe D antigens that were detected only by IAT testing.
- With the strong monoclonal anti-D reagents we have now, many red cells previously described as weak D show strong, direct agglutination with these reagents.
- Some partial D phenotypes (such as Cat VI) still require IAT testing for detection of D.
- Weak D testing is not required for patient testing.

Anti-D reagents used

- Manufacturer #1 anti-D is a monoclonal blend with an IgM component (cell line GAMA401) and an IgG component (cell line F8D8).
  - Per MI, it is expected to be reactive @ IS with weak D and some partial D rbcs, except those from Cat VI (reactive at IAT only).
- Manufacturer #2 anti-D is a human monoclonal-polyclonal blend prepared from human monoclonal IgM anti-D and human IgG anti-D, plus a monoclonal IgM component (cell line MAD2).
  - Per MI, it is expected to react with weak D and partial D rbcs by the IAT test, and may occasionally react directly with weak D rbcs.

“Which reagent is best?”

It depends on your testing needs:

Pros:

Reagent #1 will detect weak D and most partial D antigens readily and reduce the amount of Rh negative products used unnecessarily.

Cons:

Rare Partial D individuals at risk for anti-D production may be transfused with Rh positive red cells and may develop anti-D.

“Which reagent is best?”

Other considerations:

- Use of reagent #2 for young females and women of child-bearing age may be advantageous, as these patients will be considered Rh negative for transfusion and RhIG evaluation.
- Red cells identified as potential “weak D” or “partial D” can also be tested using the ALBAclone Partial RhD typing kit to help determine risk for D alloimmunization.

Summary

- Patient is D positive.
  - Warm-reactive autoantibody with anti-E and anti-Fy^a.
- Rh negative products provided as requested.
- If regular transfusion becomes necessary for this patient, testing for partial D antigen might be helpful in determining if allo anti-D would be produced.

Stay tuned!