HEMOLYTIC TRANSFUSION REACTION DUE TO ANTI-Di^b
Case study by Jim Perkins and Elizabeth Clay (©2009)

A 67 year old Hispanic-surnamed woman with a history of insulin-dependent diabetes, hypertension, CHF, azotemia, and peripheral vascular disease was admitted to the hospital with an abscess in her foot and lymphadenitis. The patient had delivered 2 children and was transfused at the second delivery at age 30. Prior outpatient treatment for the abscess had included 3 IV doses of ceftriaxone at daily intervals, on which she improved, followed by 2 days of oral amoxicillin/clavulinic acid during which her condition again deteriorated. On admission the abscess was drained and she was placed on IV cephtriaxone and ticarcillin/clavulinic acid. IV heparin was started for the peripheral vascular disease. On the 2nd hospital day pretransfusion testing revealed a serum antibody reacting 2+ in the IAT with all test RBCs. The direct antibglobulin test (DAT) was negative. A specimen was sent of an Immunohematology reference laboratory. On the 7th day a subclavian catheter was placed because of poor peripheral IV access. The post-insertion chest x-ray was normal but later that evening the patient suffered a respiratory arrest associated with shock (BP as low as 55/28) and was found to have a hemothorax. Four units of incompatible RBCs were transfused on an emergency basis with consent of the patient's family. No immediate reaction was noted, and the transfusion, in association with pressors and asanquinous fluids, resuscitated her.

The day following the transfusion the antibody was identified as anti-Di^b. A search of the American Rare Donor Program files identified a single unit of Di^b negative frozen RBCs.

The following table summarizes her hospital course.

Day	Hgb/hct gm/dL & %	T/Dbili mg/dL	LDH mg/dL	Plt ct /µL	PT/PTT sec	BUN/Cr mg/dL
1	8.5/26.1	0.4/0.2	140	432,000		64/2.4
2	7.5/23.2	0.3/0.2	113			65/2.3
3	7.6/23.8			531,000		
4	7.4/22.9			544,000		47/1.8
6	6.9/21.1			554,000		34/1.6
7, AM	7.1/21.6			527,000		30/1.5
Subclavian catheter placed; patient developed respiratory arrest and shock due to a hemothorax						
PM	4.0/12.8			310,000		
Transfusion of 4 U incompatible RBCs and 4 U FFP overnight; no signs or symptoms of an IHTR.						
8	10.1/30.7			225,000	21/68	31/2.9
9	7.9/21.7	1.1/0.9	20,700	85,000	19.9/33	47/4.2
Haptoglobin 82 mg/dL (nml 43-212), plasma Hgb 1.6 mg/dL (nml<2.5), DAT positive						
10	7.3/20.4	1.1/0.9	13,300	68,000	17.9/32	73/5.0
11	7.6/21.7	1.4/1.3	5,720	90,000	14.9/26	95/5.9
Plasma Hgb 3.1, DAT 2+; One unit Di^b negative RBCs transfused, dialysis performed						
12	8.6/25.0	1.9/1.6		84,000	15.0/23	72/5.1
13						92/6.4
14	6.7/19.8			70,000		110/7.3
Patient dialyzed						
15	Patient developed bradycardia and asystole and died					

The anti-Di^b was identified at 2 reference laboratories, Immucor and Blood Center of Wisconsin (BCW). The specimen send to BCW was drawn on the 7th hospital day, prior to transfusion, and had a negative DAT. Neither laboratory performed a drug study.

DISCUSSION QUESTIONS:

1. What is the differential diagnosis of a "pan-agglutinin", an antibody that reacts with all allogeneic RBCs tested?

2. How might one attempt to find blood for this patient in an emergency? Over the long term? (Hint: What is the significance of her ethnicity?)

3. What manifestations of a hemolytic transfusion reaction did this patient present? Is there anything else that might have been done? What treatment might be available for this patient in the future?