



A Fatal DHTR Transfusion Reaction

Case Study by Lindsay Webber
Laboratory Manager, Redington Fairview General Hospital

Patient Presentation

- 77 year old female presented to Emergency Department
- Chief complaint was Nausea/Vomiting/Diarrhea
- Initial diagnosis of anemia, gastroenteritis, atrial fibrillation with rapid ventricular response, acute hypokalemia, hypomagnesemia, hypocalcemia

Initial Lab Results	
Hemoglobin/Hematocrit	5.1/21.3 (L)
Potassium	2.4 (L)
Calcium	6.7 (L)
Magnesium	1.0 (L)

Initial Blood Bank Testing

- Order for type, screen and 3 units
- Patient had no blood bank history available
- Patient was found to be A Positive with negative antibody screen
- 3 A Positive units were immediate spin crossmatched
- Patient transfused
 - 2 units on day 1; post H&H 8.6/30.9
 - 1 unit on day 2

Patient History

- Patient moved to current area after living in another state
- Pernicious Anemia
- Colon resection for removal of colonic mass
- Thyroidectomy
- Stented coronary artery

Day 2

- Patient admitted as inpatient
- Colonoscopy performed and colonic mass found
- H&H 7.6/26.6
- 3rd unit transfused
- Colectomy scheduled for Day 5

Day 7

- Patient tolerated colectomy well on Day 5
- Colonic mass removed and determined to be adenocarcinoma
- H&H 7.3/26.9
- Oozing at surgical site

Day 7 cont.

- Inpatient provider consults with Heme-Onc as patient now has severe microcytic anemia
- DIC ruled out as platelet count normal and fibrinogen level elevated
- Suggested retic count: if low bone marrow suppression/high hemolysis
- Delayed hemolytic transfusion reaction considered. Advised to order DAT, repeat type and screen, and trend bilirubin and LDH
- None of this information was communicated to blood bank

Day 8 Blood Bank/Lab

- Patient drawn in am for new type and screen as previous specimen was now expired
- Specimen grossly icteric
- Repeat type and screen: A Positive/Negative antibody screen
- Patient transfused 4th A Positive immediate spin unit
- New specimen drawn again in pm for DAT; tech decided that new specimen was not needed an added DAT to am specimen. DAT negative for IgG and complement

Day 8 Blood Bank/Lab cont.

- Technologist working in chemistry noticed grossly icteric specimen and contacted hospitalist to suggest order for bilirubin/liver enzymes as only BMP was ordered

Test	Day 1	Day 7	Day 8
Total Bilirubin	0.4	2.2	3.7
Direct Bilirubin	NT	0.5	1.1
ALT	18	24	41
AST	27	60	140
LDH	NT	1795	2042
Imm. Retic Fract		38.1 H	

Day 9/10

- Day 9 patient had new blood bank specimen drawn with positive antibody screen and positive DAT
- Anti C identified
- All 4 units patient received were anti-C positive
- This information was not communicated to the hospitalist
- Patient decided to go on comfort care afternoon of Day 9
- Patient expired on day 10

Day 11

- Blood bank supervisor noted that patient had expired that had been recently transfused and initiated transfusion reaction workup
- All blood bank specimens collected were retested
- It was determined that the specimen collected on Day 8 in pm that was never tested was first specimen with positive antibody screen. The DAT on this specimen was also positive for IgG

What Went Wrong?

- Patient history not determined as patient was from out of state and initial antibody screen was negative. Patient did state that she had cancer treatment for colonic mass in another state but was unable to remember the name of the facility. She was unsure if she had ever received blood products
- No communication with blood bank when hospitalist and heme-onc suspected delayed hemolytic transfusion reaction and transfusion reaction workup was not initiated
- Blood bank technologist did not consider icteric specimen as sign of possible transfusion reaction on recently transfused patient

What Went Wrong? cont.

- Technologist made decision to use specimen collected earlier in the day and added DAT to that specimen. Comparison of specimen showed increased icterus in pm sample vs am. PM sample should have been used for DAT
- Positive antibody screen and DAT detected on Day 9 not communicated directly to hospitalist team
- Unable to initiate steroid treatment for transfusion reaction as patient had made decision to go on comfort care, refused steroid treatment when offered

Follow Up

- Multi-discipline root cause analysis performed to include blood bank, laboratory management, hospitalist team, surgical team, risk management team
- Reported to DHHS as sentinel event
- Reported to FDA as transfusion associated death
- Disclosure to patient's family

Corrective Action

- Hospital wide clinical staff review of transfusion reaction policy and procedure highlighting the need for communication between blood bank and provider when any type of transfusion reaction is suspected or part of differential diagnosis
- Repeat competency assessment performed on blood bank staff involved
- Laboratory education with blood bank staff regarding transfusion reactions and the ability of the blood bank to initiate transfusion reaction workups.
- Education provided regarding the importance of a transfusion history and that negative antibody screen does not always mean that the patient has a history of antibodies
- Purchase of blood bank automated analyzers for consistency in reaction interpretation for lower volume blood bank