"THE WORST PAIN I'VE EVER HAD"

Case study by Jim Perkins, M.D. (©2009)

The evening shift supervisor's story

A type-and-screen was ordered and performed on Josephine Smythe at 1600 on an order from the emergency room. She was group B positive with a negative antibody screen.

A request for 2U PRBCs, accompanied by a specimen was received for Mary Smith at 1900. She was group O positive with a negative antibody screen.

At about 2100 a call was received from ward 5 asking if blood was ready for Mary Smith. The testing was near completion, so the caller was told it would be ready in 10-15 minutes and that they would be called when it was ready. About 10-15 minutes later another phone call was received asking if blood was ready for Smith. The units were being tagged at that time, so the caller was told it was ready.

Within about 5 minutes a nursing assistant came to pick up blood with a "pick-up slip" stamped for Josephine Smythe, for whom no blood was crossmatched. Realizing the similar sound of the last names, this individual was questioned whether the ward had just called regarding status of the patient's blood, and he said "yes." It was explained that there had probably been a miss-communication, and that the Blood Bank was under the impression that it was blood for Smith that was needed. The individual was shown the name of Smith on the "Transfusion Administration Records" (TAR), and asked if it was really patient Smith that he needed blood for. He said 'no', that it was Josephine Smythe as on his pick-up slip. It was explained that only a type-and-screen had been ordered for Smythe, and that we could crossmatch blood for her from the type-and-screen specimen. No blood was issued for either Josephine Smythe or Mary Smith, and the nursing assistant returned to the ward.

It was mentioned to the technologist working on Mary Smith that the last phone call had been regarding Josephine Smythe, not Mary Smith, and that she should call to tell the floor that blood was ready for Mary Smith. She made this call, saying both first and last names.

Being suspicious of the similar sounding names, the supervisor called ward 5 to question which patient needed blood and to obtain a crossmatch requisition for Josephine Smythe (if that was truly the intended recipient) since none had been received for her. The possible confusion with the names was related to the ward secretary, and she was asked to find out who really needed to be transfused. After several explanations and identifying the patients separately by both first and last names, it appeared that everything was straightened out and that Josephine Smythe was the intended recipient. The laboratory asked that a requisition for crossmatch of units be sent for Smythe, and group B RBCs were crossmatched. Upon completion of the crossmatch, ward 5 was called to tell them blood was ready.

The nursing assistant returned to the Blood Bank with a pick-up slip for Josephine Smythe at 2140. Blood was signed out by the usual protocol matching the information on the TAR, the unit tag, the label, and the pick-up slip.

The crossmatch requisition for Smythe never arrived, so a telephone request form was completed.

At 2235 a call was received by the Blood Bank that Mary Smith was reacting to her blood. While checking to see if blood was issued for Smith, blood and a TAR labeled for Josephine Smythe was returned from ward 5. The supervisor informed the caller, a medical student, that there had been a blood mix-up. She was told that the blood was ABO incompatible and that she should immediately take measures to treat a hemolytic transfusion reaction. The Medical Director was called and came in to the hospital.

The Medical Director's story

On arrival to ward 5 the patient, Mary Smith, was found to be in severe distress with an ashen face, in the midst of a severe rigor, and with obvious dyspnea, but alert and coherent. The patient later related that the pain was the worst she had ever experienced, that it was located in the lower back, and that she had to clutch the bed rails to keep from screaming. The nurse related that the reaction began immediately after the 15 minute vital signs were taken, at which time she had received 25 cc of RBCs. There was no phlebitis or urticaria, and wheezing was absent.

The service had already administered diphenhydramine and solumedrol. It was suggested that the 500 cc of saline that had been hung be given as a bolus, and that it be followed over the course of the night with up to 2 liters of saline with furosemide to induce a diuresis. In addition, a dose of 25 mg of meperidine was suggested for relief from the rigor.

The only significant past medical history was of breast cancer, for which she had one mastectomy 20 years earlier and another 10 years earlier. There was no heart or lung disease. The present illness was an undiagnosed anemia which was hypoproliferative with microcytic, hypochromic indices and a history of a low B12 level. However, the anemia had not responded to iron or B12 administration.

The course of the patient's vital signs follows:

Time	BP	Temp	PR
2145 (Pre-tx)	130/70	99.1	100
2200	132/70	99.1	100
2215	150/70	99.2	110
2230	160/90	98.7	120
2245	220/110	101.8	120
2300	180/90		120
2315	180/94		
2330	160/90		

Both pre- and post-transfusion specimens from Mary Smith were group O on repeat testing. The post-transfusion sample had a microscopic positive DAT, and the serum of the post-transfusion sample was slightly red brown, compared to the pale yellow pre-transfusion specimen. The unit of RBCs was confirmed to be group B.

The nurse's story

The nurse related that she had filled out the pick-up slip for Josephine Smythe. Because the ward had 7 new admissions on the night of the reaction and everyone was busy, she had gone to another patient's room to find someone to check the unit against its accompanying paperwork. The nurse did recall checking the patient's armband and not noticing a discrepancy.

Epilogue

Once the acute phase of the reaction was over, the patient was told that a clerical error had caused an incompatible unit to be transfused. She speculated that this would be good for the nurse's career since she would teach others the importance of the clerical check, and she would not make this mistake twice!

The hospital policy was changed to require that the identity of blood components be checked at the patient’s bedside by two qualified individuals.

Study Questions

1. What factors (root causes) contributed to this clerical error?

2. What is the pathogenesis of the various manifestations of this transfusion reaction? What other manifestations of an immediate hemolytic reaction (IHTR) can be seen?

3. If RBCs were randomly chosen off of the refrigerator shelves, without regard to ABO group, how often would the units be incompatible? (Show your calculations assuming the following population frequencies of ABO group: O=45%, A=40%, B=10%, AB=5%.)

4. What is the rationale for the treatment given in this case? Should any other treatment be given?