

FEATURED CASE #19-07

(Case study by Jim Perkins, © 2019)

History: This patient was a 59 year old man who came to the ED with a relatively minor cut on his abdomen that would not stop bleeding and was admitted to the hospital. He admitted to heavy alcohol consumption ("one fifth per day") and had noted intermittent hematochezia (bright red blood per rectum, BRBPR) over the past 2 to 3 weeks as well as increasing abdominal girth. His past history was notable for seizures unrelated to alcohol, and obesity with adult onset diabetes and sleep apnea. He denied any significant surgical procedures and denied transfusion, including on careful questioning by the author after discharge. His admitting hgb level was 9.5g/dL, his platelet count was 174,000/ μ L, and his PT/INR was 13.3s/1.3. Over the first day in the hospital the patient became increasingly agitated and went into alcohol withdrawal syndrome. A type-and-screen on the first hospital day yielded the following results:

ABO and Rh Typing

<A	<B	A1 cells	B cells	6% alb	<D	<D/AHG	CCC	Interp
4+	0	0	4+		4+			

Antibody Screen

	Gel
SCI	0
SCII	0

Over the first night in the hospital the patient's hgb fell to 8.7g/dL, and because of concern that his hgb might underestimate the degree of bleeding one unit of electronically crossmatched RBCs was transfused.

By the 8th hospital day the patient's hgb had fallen to 7.3g/dL. A type-and-screen yielded the same results, and 2 units of transfused RBCs brought the hgb to 9.3g/dL (hct = 27.4). The patient was discharged on the 11th hospital day with a hgb of 9.1g/dL.

The patient was readmitted 14 days later after of 2 episodes of hematochezia in the previous 2 days. The hgb was 9.9g/dL on admission but fell to 9.2 within 11 hours, and a 3rd type-and-screen, 17 days after the previous, yielded the following results:

ABO and Rh Typing

<A	<B	A1 cells	B cells	6% alb	<D	<D/AHG	CCC	Interp
4+	0	0	3+		3+			

Antibody Screen

	Gel, 30'
SCI	0
SCII	1+

Direct Antiglobulin Test

	Poly (tube)	IgG (tube)	<C3 (tube)
AHG	0	0	
5' incub.	0	0	
CCC	2+	2+	

FEATURED CASE #19-07

Antibody Screen Cell phenotype

	Rh system	Kell						Duffy		Kidd		Xg	Lewis			MNSs				P	Lutheran		Cell	Gel			
		D	C	E	c	e	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Xg ^a	Le ^a	Le ^b	S	s	M			N	P1	Lu ^a
SC I	R1R1	+	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	0	0	+	0	+	+s	0	+	SC I	0
SC II	R2R2	+	0	+	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+	+	0	+s	0	+	SC II	1+	

Plasma Panel

VRA140		Rh system						Kell						Duffy		Kidd		Xg	Lewis				MNSs				P	Lutheran		Other Typings	Cell	Gel
Cell	Rh	D	C	E	c	e	V	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Xg ^a	Le ^a	Le ^b	S	s	M	N	P1	Lu ^a	Lu ^b					
1	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	0	+	+	+	0	+	+	+	+	+	0	+		1	0		
2	R1R1	+	+	0	0	+	0	+	+	0	+	0	+	+	0	+	+	+	0	+	+	0	+	0	0	0	0	+	HLA+	2	w+	
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	0	+	0	+	+	+	+	0	0	0	+		3	0		
4	Ror	+	0	0	+	+	0	0	+	0	+	0	+	+	+	+	0	+	0	+	0	+	0	+	+	0	+		4	0		
5	r'r	0	+	0	+	+	0	0	+	0	+	0	+	+	0	+	+	0	0	+	0	+	0	+	+	0	+		5	0		
6	r"r	0	0	+	+	+	0	0	+	0	+	0	+	+	0	0	+	+	0	+	+	+	+	+	+	0	+		6	0		
7	rr	0	0	0	+	+	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	+	0	+	+	0	+	HLA+	7	0		
8	rr	0	0	0	+	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	0	0	0	+	+	0	+		8	0		
9	rr	0	0	0	+	+	0	0	+	0	+	0	+	+	+	+	0	0	0	0	0	+	+	0	+s	0	+		9	0		
10	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	+	+	0	+	+	+	+	+	0	+	0	+		10	0		
11	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	+	0	0	0	0	0	+	0	+	+	+	0	+	HLA+	11	0	
Patient																												AC	0			

Questions:

1. What is the cause of the positive antibody screen? Can we identify a specificity for the patient's antibody? If not, can we make guesses? What do you think might be going on here? What testing would you like to do to clarify this case?

FEATURED CASE #19-07

Selected Cell Panel

VRA140		Rh system					Kell					Duffy		Kidd		Xg	Lewis			MNSs				P	Lutheran		Other Typings	Cell	Gel, 30'		
Cell	Rh	D	C	E	c	e	V	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Xg ^a	Le ^a	Le ^b	S	s	M	N	PI	Lu ^a				Lu ^b	
1	rr	0	0	0	+	+	0	+	+	0	+	0	+	+	+	0	0	0	0	+	+	0	+	0	+	0	0	+		1	0
2	Rr	0	0	0	+	+	0	0	+	0	+	0	+	+	0	+	+	+	+	0	+	+	+	+	0	0	+		2	0	
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	+	+	+	0	0	+	HLA+	3	0	
4	R1R2	+	+	+	+	+	0	+	0	0	+	0	+	0	+	+	0	0	0	+	0	+	+	+	+	0	+		4	2+	
5	Rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	+	0	+	0	+	+	+	+	+	+	0	+		5	3+	
6	R1R1	+	+	0	0	+	0	+	0	0	+	0	+	+	+	0	+	+	0	+	+	+	+	+	0	0	+		6	2+	

Extended Patient Phenotype*

	Rh system				Kell				Kidd		Duffy		Lewis		MNSs									
	C	E	c	e	K	k	Kp ^a	Js ^a	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	S	s	M	N	PI	I	H	A ₁		
Patient	+	0	+		0																			

*Tested using current specimen

Questions:

2. What is the specificity of the patient's antibody? Is it proven? Is there anything notable about this patient's antibody compared to other antibodies of this specificity? What additional testing would you like to do to investigate this case?

Segments of the 3 units transfused during the previous hospitalization were retrieved and phenotyped for K. The unit transfused on the day of admission was K-, but both units transfused on day 8 were K+.

Questions:

3. Do you think that we can say there has been a DHTR? If so, what is unusual about it as a DHTR?

FEATURED CASE #19-07

The patient still had detectable anti-K a month after it was first detected, but about 7 weeks after that and on subsequent testing it was not detected by the same methods. The patient was not transfused again until his short, terminal hospitalization, 6 months after he first presented.

The following figure shows the time course of the patient's hemolytic reaction.

