

ACUTE HEMOLYTIC ANEMIA IN A 15 YEAR OLD
Case Study by Jim Perkins M.D. (©2009)

History:

The patient was a 15 year old boy who presented with a 2 day history of fever followed by dark urine which prompted him to report to his boarding school infirmary. There he was noted to be slightly jaundiced, anemic with a high LDH level, and dehydrated. IV fluids were given. He then flew home and was brought to the hospital.

The patient denied sore throat or difficulty swallowing. A friend at boarding school had recently had infectious mononucleosis. There was no significant past medical history.

On examination he appeared mildly jaundiced. There was no lymphadenopathy or hepato-splenomegaly notable by physical examination.

Notable laboratory findings included:

- Hgb/hct = 8.9/26
- rdw = 13 (nml 11.6-14.8)
- 3+ spherocytes
- WBC = 31,000 with moderate atypical lymphs
- Plts = 403,000
- U/A: red, 3+ blood, 3+ bilirubin, 3+ protein, 5-10 RBCs
- Total/direct bilirubin = 3.1/0.6
- Haptoglobin <5
- LDH = 1635
- SGOT = 64
- SGPT = 37
- Infectious mononucleosis screen (“Monospot”) positive

Because the patient didn’t have the typical clinical findings of infectious mononucleosis (sore throat, lymphadenopathy, hepatosplenomegaly) other diagnoses were considered. The hematology laboratory reported that a cold agglutinin was interfering with testing, so a cold autoantibody study was ordered. The sample appeared hemolyzed. The following serologic studies were obtained.

ABO and Rh Typing

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

Antibody Screen

	Gel, initial	Repeat x2	
OI	w+	0	0
OII	w+	0	0

Direct Antiglobulin Test

	Poly	IgG	<C3
AHG	2+	w+	1+
5' incub.	3+	vw+	3+
CCC			

Antibody Screen, tube technique

4 drops serum, saline suspended RBCs				
	I.S.	37°	AHG	CC
OI	0	0	0	2+
OII	0	0	0	2+
AC	w+	w+	w+	

Lot #06028		Rh system					Kell					Duffy		Kidd		Lewis		P	MNSs					Lutheran		Xg	Other Typings	4 drops saline						Eluate	
Cell	Rh	D	C	c	E	e	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	P1	M	N	S	s	Lu ^a	Lu ^b	Xg ^a		Cell	IS	20' RT	37°	AHG	CC		
1	R1R1	+	+	0	0	+	+	+	0	+	0	+	0	+	+	0	0	+	0	+	+	+	0	0	+	+	1	0	0	0	0	0	+	0	
2	R1wR1	+	+	0	0	+	0	+	0	+	0	+	+	+	0	+	+	0	+	0	+	0	+	0	+	+	C ^w +	2	0	0	0	0	0	+	0
3	R2R2	+	0	+	+	0	0	+	0	+	0	+	+	0	0	+	0	+	w	+	+	+	+	0	+	+	3	0	0	0	0	0	+	0	
4	Ror	+	0	+	0	+	0	+	0	+	0	+	0	0	+	0	0	+	+	+	+	0	+	0	+	+	V+	4	0	0	0	0	0	+	0
5	r'r	0	+	+	0	+	+	+	0	+	0	+	+	0	+	0	0	+	+	0	+	+	0	0	+	+	5	0	0	0	0	0	+	0	
6	r''r	0	0	+	+	+	0	+	0	+	0	+	0	+	+	+	0	+	+	0	+	0	+	0	+	+	Bg ^a +	6	0	0	0	0	0	+	0
7	rr	0	0	+	0	+	+	+	0	+	0	+	0	+	+	+	0	+	+	+	+	0	+	0	+	+	7	0	0	0	0	0	+		
8	rr	0	0	+	0	+	0	+	+	+	0	+	+	0	+	0	0	+	0	+	+	+	+	0	+	+	8	0	0	0	0	0	+		
9	rr	0	0	+	0	+	0	+	0	+	0	+	+	0	+	0	0	+	0	+	+	+	0	0	+	+	9	0	0	0	0	0	+		
10	rr	0	0	+	0	+	0	+	0	+	0	+	+	+	+	0	+	0	+	+	0	+	+	0	+	+	10	0	0	0	0	0	+		
11	r''r	+	0	+	+	+	0	+	0	+	0	+	+	+	0	+	0	+	+	0	+	0	+	0	+	+	I-,Co ^b +,Bg ^a +,Sc:2	11	2+	3+	2+	1+		0	
Patient																											AC	0	w+	w+	w+		0		
Cord I																											I	1+	1+	1+	1+		0		
Cord II																											II	3+	3+	2+	1+		0		

Thermal amplitude study						
	Saline susp. RBCs			Albumin susp. RBCs		
	37°	30°	RT	37°	30°	RT
OI	0	0	0	0	0	w+
OII	0	0	0	0	0	w+
Cord I	0	1+	4+	0	3+	4+
Cord II	0	1+	4+	0	3+	4+
Cord III	0	2+	4+	0	3+	4+

Titration at 4°C												
	1:1	1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024	1:2048
OI	4+	4+	4+	4+	3+	2+	w+	0	0	0	0	0
Cord	4+	4+	4+	4+	4+	4+	4+	3+	w+	0	0	0

Outcome:

Because the above findings (cold auto-anti-i) were characteristic of EBV infection, this again became the working diagnosis and was proven correct later when the specific EBV serologic testing was completed. The patient was started on prednisone 80 mg/D.

EBV serologies:

EBV VCA IgM; positive

EBV VCA IgG; positive

EBNA; negative

	Hgb/hct	MCV	WBCx10 ³	Plts	LDH	Haptoglobin	T/D bili	GOT/GPT
Admission	8.9/26.0	87.4	31	403	1635	<5.8	3.1/0.6	64/37
Day 2	8.0/25.0		25.8	483	1642			
Day 3	7.7/23.5		33.9	498	1501		2.0/0.5	44/30
Day 4	7.0/19.8	100.0	27.0	457	1079			
Day 5	7.5/21.4	106.0	23.1	455	972			
Day 7	9.3/27.8	110.8	21.4	416	687			
Day 13	35.8	107.0	10.4	302	272	76.6		

The patient was discharged on the fifth day.

QUESTIONS:

3. Why did the platelet count increase and then decline during the hospitalization? Similarly, explain the course of the patient's MCV.