



 **New York** *Blood Center*

BAD TO THE BONE...MARROW



OBJECTIVES

- Discuss the need for accurate patient medical history.
- List the benefits of genotyping BMT recipients and donors prior to transplantation.

PATIENT ADMIT INFORMATION

Patient is a Caucasian female

- Age
 - 25yrs
- Diagnosis
 - Hodgkin's lymphoma
- Transfusion history
 - No prior transfusions

INFORMATION FROM HOSPITAL BLOOD BANK

- Getting weak back type
- DAT 1+ IgG – did not prepare eluate
- Antibody reactivity at all phases
- Patient is difficult in giving consent to be drawn

JUNE 2015 – INITIAL IRL TESTING RESULTS

	Anti-A	Anti-B	Anti-D	Rh Cont.	A ₁ Cell	B Cell	Interpretation
RT	0	0	0	0	2+ ^{mf}	0	?
15 min RT	0	0	0	0	3+ ^{mf}	0	?

	Poly	IgG	C3	Saline
RT	1+w	0✓	m ^w	0
5"	1+w		1+ ^w	0

PANEL TESTING

[illegible]

PANEL RESULTS

[illegible]

WHAT DO WE KNOW?

ABO/Rh

- inconclusive, mixed field reactions for ABO
- Rh appears to be negative

DAT

- Positive
 - Need to prepare eluate

Plasma

- Apparent anti-D, anti-K and ?
 - More work needed still need to rule in/out anti-E and anti-Fy^a

ELUATE RESULTS

[illegible]

ADDITIONAL TESTING RESULTS

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy_a	Fy _b	Jk _a	Jk _b	LISS IAT		ELUATE PEG ITA
1	0	0	+	+	+	+	+	+	+	+	0	0	0	+	0	0	+	0√		0√
2	+	+	+	0	+	0	+	0	+	0	+	+	0	+	+	+	0	/		m
3	+	+	0	0	+	+	0	+	0	0	0	+	0	+	0	+	0	/		0√
4	0	0	0	+	+	+	0	+	+	0	+	0	+	0	+	+	0	/		0√
5	0	0	0	+	+	0	+	0	+	+	0	+	0	+	0	+	0	/		0√
6	0	+	0	+	+	+	+	+	+	0	+	+	0	+	0	0	+	/		0√
7	+	+	0	0	+	+	0	0	+	0	0	0	+	+	+	+	+	/		0√
ac																		/		/

WHAT OTHER INFORMATION DO WE NEED?

- Mixed field reactions?
 - Has the patient really had no transfusions?
 - There are no records for her in our computer
 - Could someone please speak to the patient or her family to verify there have not been any recent transfusions?
 - Maybe when she had the BMT
 - When?
 - She received a BMT in February 2015
 - Where?
 - Contact the facility

WHAT THE OTHER GUYS KNEW

- The patient typed as B Positive and in February 2015 received an O Negative BMT.
- Since that time she was found to have anti-D, anti-K and a warm autoantibody.

WHAT WE KNOW...NOW

ABORh

- consistent with a BMT patient historically B Positive receiving an O Negative

Plasma

- anti-D and anti-K, also reactivity with one D-negative, K-negative cell with no apparent specificity

Eluate

- Weakly reactive with 7 of 20 cells; no specificity was apparent.

Any ideas on what else to do?

SIX MONTHS LATER...SHE IS BACK

- December 2nd the patient is back
- Hgb: 5.4
- DX: WAIHA, severe anemia; encephalopathy, Hodgkin's Lymphoma in relapse; patient to receive probable exchange transfusion or plasma pheresis
- Patient history: BMT B+ to O-; anti-D, anti-K in the plasma; and weak unidentified in plasma and eluate.
- Hospital will not transfuse unless patient drops below 5g Hgb
- Patient has not been recently transfused

HEMOGLOBIN DROPS

12-2: 2 rbcs, group O; D-, K-

12-3: 4 rbcs; group O; D-, K-

12-4: 3 rbcs; group O; D-, K-

12-5: 2 rbcs; group O; D-, K-

12-6: 4 rbcs; group O; D-, K-

12-7: 3 FFP

A call is made to the reference lab...

DECEMBER 7TH... THE CALL



more awesome pictures at THEMETAPICTURE.COM

HAVING LUNCH



WE HAVE AN ISSUE



WHAT'S UP?



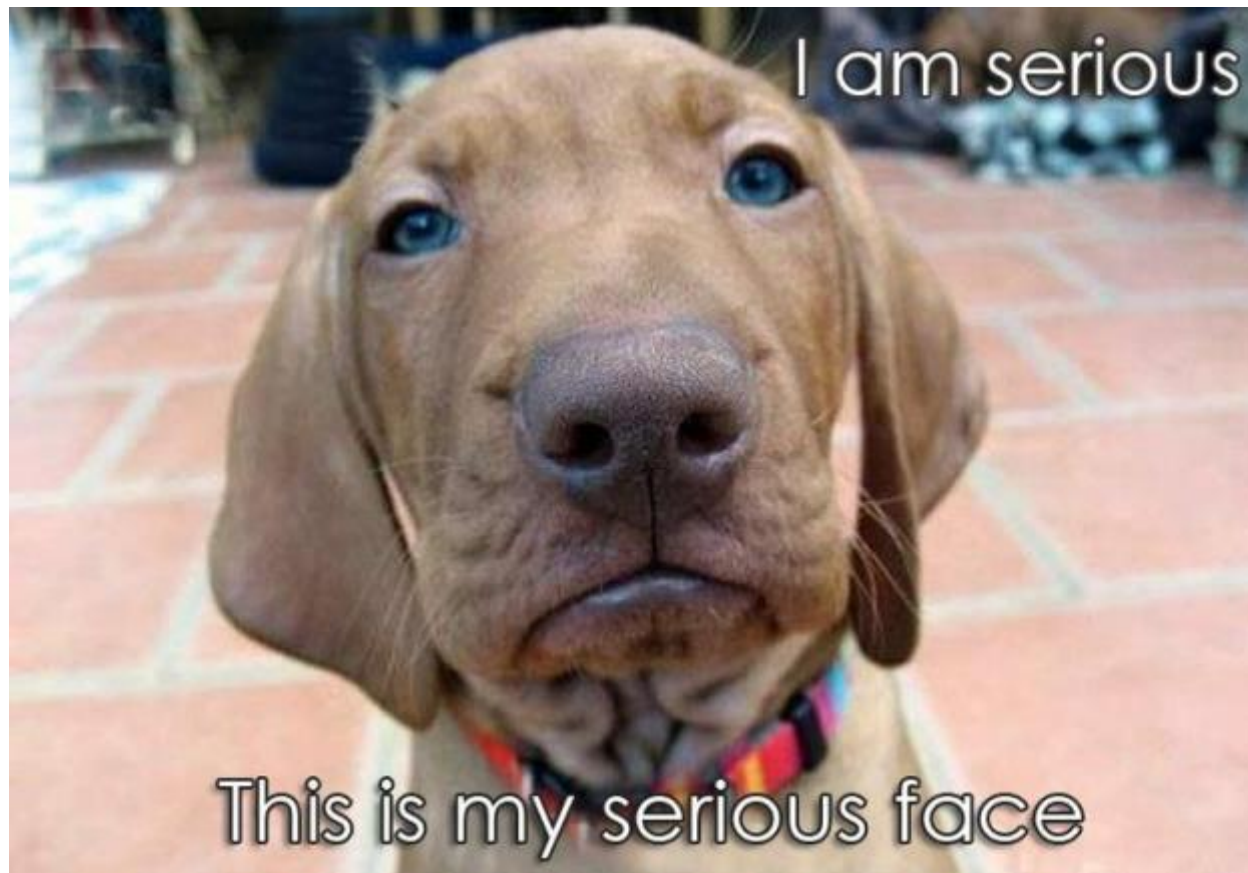
SHE'S BACK AND...



SERIOUSLY?



YES!



WE WILL BE WAITING



IRL TESTING

	Anti-A	Anti-B	Anti-D	Rh Cont.	A ₁ Cell	B Cell	Interpretation
RT	0	0	2+	2+	4+	0	?
Warm washed x4			1+	1+			?
Warm washed x8			1+	1+			?

	Poly	IgG	C3	Saline
IS	3+	3+	2+	1+
WW x12	4+	4+	3+	m
WW x14	4+	4+	2+	0✓

INITIAL PANEL RESULTS

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy _a	Fy _b	Jk _a	Jk _b	5'rt	LISS 37C **	iAT
1	0	+	0	+	+	+	0	+	0	0	+	+	0	+	+	+	0	0	0	2+
2	0	0	+	+	+	+	+	+	0	0	+	+	0	+	+	+	0	0	0	2+
3	0	0	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	0	0	3+
4	0	0	0	+	+	0	+	+	+	+	0	0	0	+	0	0	+	0	0	2+
5	0	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+	0	0	0	2+
6	0	0	+	+	+	+	+	0	+	0	+	+	0	+	0	0	+	0	0	3+
7	0	0	0	+	+	+	0	+	0	0	+	+	0	+	0	+	0	0	0	3+
8	0	0	0	+	+	+	0	0	+	+	0	+	0	0	+	+	0	0	0	3+
9	0	0	0	+	+	+	0	0	+	0	+	0	0	0	+	0	+	0	0	3+
ac*																		0	0	3+
11	0	+	0	0	+	+	+	0	+	+	0	+	0	0	+	+	+	/	/	1+
12	0	+	0	0	+					0	0	+	0	0	0	+	+	0	0	1+
13	0	0	+	+	0	+	0	+	0	+	0	+	0	0	+	+	0	0	0	2+

INITIAL PANEL INTERPRETATION

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy _a	Fy _b	Jk _a	Jk _b	5'rt	LISS _{37C} **	iAT
1	0	+	0	+	+	+	0	+	0	0	+	+	0	+	+	+	0	0	0	2+
2	0	0	+	+	+	+	+	+	0	0	+	+	0	+	+	+	0	0	0	2+
3	0	0	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	0	0	3+
4	0	0	0	+	+	0	+	+	+	+	0	0	0	+	0	0	+	0	0	2+
5	0	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+	0	0	0	2+
6	0	0	+	+	+	+	+	0	+	0	+	+	0	+	0	0	+	0	0	3+
7	0	0	0	+	+	+	0	+	0	0	+	+	0	+	0	+	0	0	0	3+
8	0	0	0	+	+	+	0	0	+	+	0	+	0	0	+	+	0	0	0	3+
9	0	0	0	+	+	+	0	0	+	0	+	0	0	0	+	0	+	0	0	3+
ac*																		0	0	3+
11	0	+	0	0	+	+	+	0	+	+	0	+	0	0	+	+	+	/	/	1+
12	0	+	0	0	+					0	0	+	0	0	0	+	+	0	0	1+
13	0	0	+	+	0	+	0	+	0	+	0	+	0	0	+	+	0	0	0	2+

ONCE AGAIN

ABORh

- Consistent with patient history

Plasma

- New anti-c

ELUATE RESULTS

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy _a	Fy _b	Jk _a	Jk _b	Acid Eluate PEG IAT
1	0	+	0	+	+	+	0	+	0	0	+	+	0	+	+	+	0	@
2	0	0	+	+	+	+	+	+	0	0	+	+	0	+	+	+	0	@
3	0	0	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	@
4	0	0	0	+	+	0	+	+	+	+	0	0	0	+	0	0	+	@
5	0	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+	0	@
6	0	0	+	+	+	+	+	0	+	0	+	+	0	+	0	0	+	@
7	0	0	0	+	+	+	0	+	0	0	+	+	0	+	0	+	0	@
8	0	0	0	+	+	+	0	0	+	+	0	+	0	0	+	+	0	@
9	0	0	0	+	+	+	0	0	+	0	+	0	0	0	+	0	+	@
ac*																		/
11	0	+	0	0	+	+	+	0	+	+	0	+	0	0	+	+	+	@
12	0	+	0	0	+					0	0	+	0	0	0	+	+	@
13	0	0	+	+	0	+	0	+	0	+	0	+	0	0	+	+	0	@

NOW WHAT?

- Plasma panel is all positive; however, it is stronger with c+ cells
- The acid eluate is agglutinated after washing – what does this mean?
- Any suggestions?

ALLO ADSORPTIONS

R₁R₁ cell; K-; Fy(a+b-); Jk(a-b+); S-, s+

- D+, C+, e+; Jk(b+) and E-, c-; K-; Fy(a-b-); Jk(a-); S-, s-

R₂R₂ cell; K-; Fy(a+b-); Jk(a-b+); S-; s+

- D+, E+, c+, Jk(b+) and C-, e-; K-; Fy(a-b-); Jk(a-); S-, s-

rr cell; K-, Fy(a+b+); Jk(a+b-); S+; s+

- c+, e+; Jk(a+) and D-, C-, E-; K-; Fy(a-b-); Jk(b-); S-, s-

All cells used for adsorbing were ficin treated.

All adsorptions were performed at 37C and each was sequentially adsorbed X 4

ADSORBED PLASMA TESTING

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy _a	Fy _b	Jk _a	Jk _b	R1R1	R2R2	rr
1	0	+	0	+	+	+	0	+	0	0	+	+	0	+	+	+	0	1+	0√	0√
2	0	0	+	+	+	+	+	+	0	0	+	+	0	+	+	+	0	2+	0√	0√
3	0	0	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	2+	0√	0√
4	0	0	0	+	+	0	+	+	+	+	0	0	0	+	0	0	+	2+	0√	0√
5	0	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+	0	1+	0√	0√
6	0	0	+	+	+	+	+	0	+	0	+	+	0	+	0	0	+	2+	0√	0√
7	0	0	0	+	+	+	0	+	0	0	+	+	0	+	0	+	0	2+	0√	0√
8	0	0	0	+	+	+	0	0	+	+	0	+	0	0	+	+	0	2+	0√	0√
9	0	0	0	+	+	+	0	0	+	0	+	0	0	0	+	0	+	2+	0√	0√
10	+	0	+	+	0	+	+	0	+	0	+	+	0	0	+	0	+	2+	/	0√
11	+	+	0	0	+	0	+	0	+	0	0	+	0	0	+	0	+	0√	/	0√
12	+	+	0	0	+	+	0	+	+	+	0	+	0	+	0	0	+	0√	/	0√

ADSORBED PLASMA TESTING

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy _a	Fy _b	Jk _a	Jk _b	R1R1	R2R2	rr
1	0	+	0	+	+	+	0	+	0	0	+	+	0	+	+	+	0	1+	0√	0√
2	0	0	+	+	+	+	+	+	0	0	+	+	0	+	+	+	0	2+	0√	0√
3	0	0	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	2+	0√	0√
4	0	0	0	+	+	0	+	+	+	+	0	0	0	+	0	0	+	2+	0√	0√
5	0	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+	0	1+	0√	0√
6	0	0	+	+	+	+	+	0	+	0	+	+	0	+	0	0	+	2+	0√	0√
7	0	0	0	+	+	+	0	+	0	0	+	+	0	+	0	+	0	2+	0√	0√
8	0	0	0	+	+	+	0	0	+	+	0	+	0	0	+	+	0	2+	0√	0√
9	0	0	0	+	+	+	0	0	+	0	+	0	0	0	+	0	+	2+	0√	0√
10	+	0	+	+	0	+	+	0	+	0	+	+	0	0	+	0	+	2+	/	0√
11	+	+	0	0	+	0	+	0	+	0	0	+	0	0	+	0	+	0√	/	0√
12	+	+	0	0	+	+	0	+	+	+	0	+	0	+	0	0	+	0√	/	0√

ADSORBED PLASMA TESTING

	D	C	E	c	e	M	N	S	s	Le _a	Le _b	P ₁	K	Fy _a	Fy _b	Jk _a	Jk _b	R1R1	R2R2	rr
1	0	+	0	+	+	+	0	+	0	0	+	+	0	+	+	+	0	1+	0√	0√
2	0	0	+	+	+	+	+	+	0	0	+	+	0	+	+	+	0	2+	0√	0√
3	0	0	0	+	+	0	+	0	+	0	+	+	0	+	0	+	0	2+	0√	0√
4	0	0	0	+	+	0	+	+	+	+	0	0	0	+	0	0	+	2+	0√	0√
5	0	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+	0	1+	0√	0√
6	0	0	+	+	+	+	+	0	+	0	+	+	0	+	0	0	+	2+	0√	0√
7	0	0	0	+	+	+	0	+	0	0	+	+	0	+	0	+	0	2+	0√	0√
8	0	0	0	+	+	+	0	0	+	+	0	+	0	0	+	+	0	2+	0√	0√
9	0	0	0	+	+	+	0	0	+	0	+	0	0	0	+	0	+	2+	0√	0√
10	+	0	+	+	0	+	+	0	+	0	+	+	0	0	+	0	+	2+	/	0√
11	+	+	0	0	+	0	+	0	+	0	0	+	0	0	+	0	+	0√	/	0√
12	+	+	0	0	+	+	0	+	+	+	0	+	0	+	0	0	+	0√	/	0√

WHAT DOES IT ALL MEAN?

ABO/Rh

- ABO was consistent with previous results
- Rh?

Eluate

- Probable WAIHA

Plasma

- WAIHA (also: rouleaux observed with all cells at LISS 37C)

Alloadsorbed plasma

- Anti-c is present

WHAT ABOUT DNA?

IRL uncomfortable performing serologic and blood DNA

- Why?
 - Patient reported to only be 98% engrafted
- Options?
 - Buccal swab of patient to obtain original genotype
 - Submitting client did not want to do this
 - Unable to obtain BMT source genotype/phenotype

WELL...WHAT HAPPENED?

12-8: at 08:15 Hgb: 4.5g;

- Transfused 2 rare rbc: O-, c-, K-. This did not work. The patient's hemoglobin continued to drop.
- Transfused 1 rbc: O-, K-, and 4 FFP

12-9: at 04:10 Hgb: 5.0g;

bilirubin: 8

direct bilirubin: 0.9

Hospital to perform plasma pheresis and RBC exchange:

- RBC exchange used 8 rbc: O-, K-

In total the patient received:

- 23 O neg, K- rbc
- 2 O neg, K-, c- rbc
- 5 group O, FFP
- 2 group A, FFP – yes, group A

AND...

The submitting hospital blood bank received a Christmas card from the patient to Thank them for giving her...





The End



 **New York** *Blood Center*