



Behave Jr^a: When an HTLA isn't an HTLA

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Patient Profile



- 25 y.o. female
- Currently pregnant
 - Second pregnancy
- No history of transfusions
- History of an unidentified HTLA

Patient Testing

- ABO/Rh: B Pos
- DAT: Negative with Polyspecific AHG
- Initial Screen:

Cell	IS	PEG IAT	Gel IgG
SC I	0	1+	1+
SC II	0	1+	1+
SCIII	0	1+	1+

CELL	D	C	c	E	e	f	V	C	K	k	K	K	J	J	F	F	J	J	L	L	P	M	N	S	s	L	L	X	Patient's Results LISS	IS	37	IgG
	w						w			p	p	s	s	a	a	y	y	a	b	e	b	1				a	b	a				
1	+	+	0	+	+	0	0	0	0	+	0	+	0	+	+	+	+	0	0	+	0	0	+	+	+	0	+	+	1	0	0	W+
2	+	+	0	0	+	0	0	+	+	+	0	+	0	+	0	+	+	+	0	+	+	0	+	0	+	0	+	0	2	0	0	1+
3	+	0	+	+	0	0	0	0	0	+	0	+	0	+	+	+	+	0	+	+	+	0	+	0	0	+	+	3	0	0	1+	
4	+	0	+	0	+	+	0	0	0	+	0	+	0	+	0	0	+	0	+	0	+	0	+	0	0	0	+	+	4	0	0	W+
5	0	+	+	0	+	+	0	0	+	+	0	+	0	+	0	+	+	0	0	+	+	+	0	+	0	0	+	+	5	0	0	1+
6	0	0	+	+	+	+	0	0	0	+	0	+	0	+	0	+	+	0	0	+	+	+	0	+	+	+	+	+	6	0	0	W+
7	0	0	+	0	+	+	0	0	+	+	0	+	0	+	0	+	+	0	0	+	0	0	+	0	+	0	+	0	7	0	0	W+
8	0	0	+	0	+	+	0	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	+	+	+	0	+	0	8	0	0	W+
9	0	0	+	0	+	+	0	0	0	+	0	+	0	+	+	0	0	+	0	+	+	+	0	+	0	0	+	+	9	0	0	W+
10	+	+	+	+	+	0	0	0	0	+	0	+	0	+	+	+	0	+	0	+	+	+	+	+	0	0	+	+	10	0	0	1+
11	+	W	+	+	W	0	0	0	0	+	0	+	0	+	0	0	+	0	0	+	+	0	+	+	0	0	+	+	11	0	0	1+
PC	+	+	0	0	+				0						+	0	+	+		0	0	0	+	+	+	+		P C	0	0	0✓	

Titer Results

Dil 30' 37 IgG	1:1	1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256
Result	W+	W+	W+	W+	W+	W+	+ ^m	+ ^m	0✓

HTLA-like Antibodies

“High Titer, Low Avidity”

- Reactivity remains after serial dilutions
 - Titrations are usually greater than 32
- Weak reacting (“avidity”)
 - $\leq 1+$ reactivity
 - Not enhanced by potentiators, but may be affected by enzymes and chemical treatments
- HTLA does *not* refer to a system
 - Includes anti-Ch, -Rg, -Cs^a, -Yk^a, -Kn^a, -McC^a, -JMH, -Yt^a, etc.

Selected Cells...

Cell phenotype	Reactivity (patient serum)
McC(a+) Sl(a-)	w+
Kn(a-) McC(a-)	w+
Yk(a-)	w+

Helpful Potentiators and Chemical and Enzyme Treatments

- Polybrene (short incubation phase)
 - Abolishes HTLA reactivity
- DTT/AET (cleaves disulfide bonds)
 - Destroys Yt^a, JMH, McC^a, Yk^a, Kn^a, etc.
- Trypsin (cleaves GPA/removes sialic acid)
 - Destroys KN, DO, JMH, etc.
- Papain/Ficin (cleaves GPA & GPB/removes sialic acid)
 - Destroys Ch, Rg, JMH, etc.

Note: Resistance to some of these treatments may help to place the antibody as well. Example: Cs^a is resistant to DTT/AET, Trypsin, and Papain/Ficin.

Treated Panels

CELL	D	C	c	E	e	f	V	Cw	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Lea	Leb	P1	M	N	S	s	Lu _a	Lu _b	Xga		Patient's Results Ficin 15' 37 IgG
1	+	+	0	0	+	0	0	0	+	+	0	+	0	+	0	+	+	+	0	0	0	0	+	0	+	0	+	/	1	W+
2	+	0	+	+	0	0	0	0	0	+	0	+	0	+	+	+	0	+	+	0	+	+	+	0	+	0	+	/	2	W+
3	0	0	+	0	+	+	0	0	+	+	0	+	0	+	+	0	+	+	0	+	+	+	0	+	+	0	+	+	3	W+
4	0	0	+	0	+	+	0	0	0	+	0	+	0	+	+	0	+	0	0	+	0	+	0	+	+	0	+	/	4	W+

CELL	D	C	c	E	e	f	V	Cw	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Lea	Leb	P1	M	N	S	s	Lu _a	Lu _b	Xga		Patient's Results DTT 15' 37 IgG
1	0	0	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	+	0	0	0	0	+	0	+	0	+	+	1	W+
2	+	0	+	+	0	0	0	0	0	+	0	+	0	+	+	+	+	+	+	0	+	+	0	0	+	0	+	0	2	W+
3	0	0	+	0	+	+	0	0	+	+	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	+	3	W+
4	0	0	+	0	+	+	0	0	0	+	0	+	0	+	+	0	+	0	0	+	0	+	+	+	+	0	+	+	4	W+

Treated Panels (cont'd)

CELL	D	C	c	E	e	f	V	Cw	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Lea	Leb	P1	M	N	S	s	Lua	Lub	Xga		Patient's Results Trypsin 15' 37 IgG
1	O	O	+	O	+	+	O	O	O	+	O	+	O	+	O	+	+	+	O	O	O	O	+	O	+	O	+	+	1	W+
2	+	O	+	+	O	O	O	O	O	+	O	+	O	+	+	+	+	+	+	O	+	+	O	O	+	O	+	O	2	W+
3	O	O	+	O	+	+	O	O	+	+	O	+	O	+	O	+	O	+	O	+	+	O	+	O	+	O	+	+	3	W+
4	O	O	+	O	+	+	O	O	O	+	O	+	O	+	+	O	+	O	O	+	O	+	+	+	+	O	+	+	4	W+

CELL	D	C	c	E	e	f	V	Cw	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Lea	Leb	P1	M	N	S	s	Lua	Lub	Xga		Patient's Results Polybrene IS IgG
1	O	O	+	O	+	+	O	O	O	+	O	+	O	+	O	+	+	+	O	O	O	O	+	O	+	O	+	+	1	O W+
2	+	O	+	+	O	O	O	O	O	+	O	+	O	+	+	+	+	+	+	O	+	+	O	O	+	O	+	O	2	O W+
3	O	O	+	O	+	+	O	O	+	+	O	+	O	+	O	+	O	+	O	+	+	O	+	O	+	O	+	+	3	O W+
4	O	O	+	O	+	+	O	O	O	+	O	+	O	+	+	O	+	O	O	+	O	+	+	+	+	O	+	+	4	O W+

Power of Persistence...

- High prevalence?
 - Potentiators, chemical and enzyme treatments failed to abolish reactivity
 - High prevalence with “HTLA-like” behavior
 - Lu^b, Vel, Kp^b, At^a, Jr^a, etc.

High Prevalence Negative Panel

CELL	D	C	c	E	e	f	V	Cw	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Lea	Leb	P1	M	N	S	s	Lu(a)	Lu(b)	Xga		Patient's Results LISS IgG
1	0	0	+	0	+	+	0	0	0	w+	0	0	+	+	0	+	0	0	+	0	+	+	+	+	0	+	/	Kp(b-)	+ ^m	
2	+	+	0	0	+	0	0	0	0	+	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	/	Yk(a-) McC(a-)	1+
3	0	0	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	0	+	0	0	+	0	+	+	0	+	/	Rg- Yk(a-)	1+
4	+	0	+	+	+	/	/	/	0	/	/	/	/	+	+	+	0	+	0	+	/	+	+	0	+	0	+	/	Yt(a-)	w+
5	0	0	+	0	+	/	/	/	0	/	/	/	/	+	0	+	+	0	0	+	+	+	+	0	+	+	0	/	Lu(b-)	w+
6	+	+	0	0	+	0	0	+	0	+	0	+	0	+	0	+	+	+	0	+	+	0	+	0	+	0	+	/	Kn(a-)	w+
7	0	0	+	0	+	/	/	/	+	+	/	/	/	+	0	+	+	0	+	0	+	+	+	+	+	0	+	/	Vel-	1+
8	0	0	+	0	+	/	/	0	0	+	0	0	/	+	+	0	0	+	0	+	/	+	+	+	0	0	+	/	SC:-1	1+

Typing Patient for High Prevalence

Antisera	At ^a	JMH	Jr ^a	Jr ^a
Patient	2+	1+	0✓	0✓
Pos Cont	2+	1+	1+	1+

Probable Anti-Jr^a!

Anti-Jr^a

- Jr^a originally classified as a Series 901 Antigen
 - Graduated to its own system in 2012
 - *ABCG2* defined the Jr(a-) phenotype
 - Most often found in those of Asian heritage (Japanese)
 - Anti-Jr^a may be stimulated by pregnancy
 - Patient's Anti-Jr^a confirmed by molecular genotype

Clinical Significance?

- Few cases of Anti-Jr^a
 - Cr⁵¹ Studies did show decreased survival of RBC
 - One fatal case of HDFN has been reported
- Consider MMA
 - Patient currently pregnant
 - Transfusion recommendations

The MMA

- Monocyte Monolayer Assay
 - Simple test used to assess clinical significance
 - Sensitized red blood cells are introduced to phagocytic monocytes
 - Test is incubated for 2 hours then washed to remove unbound RBCs
 - Monocytes with phagocytosed RBCs are counted and a percentage is reported
 - >3% is considered positive
 - <5% incompatible blood may be transfused with little risk
 - 5-20% risk of reaction increased to 33%
 - >20% risk of reaction increased to 64%

Transfusion Recommendations

- Anti-Jr^a considered mildy, clinically significant
- Transfusion should be avoided
 - Jr(a-) blood should be provided if needed
 - No blood needed and a healthy baby was delivered!

References

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Thank You!

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