



*ANTI-JK^a
AUTO-
ANTIBODY*

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CASE HISTORY:

- A 41-week pregnant female came to the hospital for delivery, a routine type and screen was performed. The patient's type is B+, but she had a positive antibody screen.
- The patient had no history of previous positive Ab screen, and she had no complications during her pregnancy.
- An antibody ID was performed, the antibody ID panel confirmed an anti-Jk^a autoantibody. Results were sent for confirmatory testing. Molecular testing confirmed the results for anti-Jk^a autoantibody.
- Two Jk^a negative blood units were prepared in a case of complications during delivery.

WHAT IS AUTO-ANTIBODY

- ❖ Autoantibody is an antibody produced against self-proteins or antibody that cross react with self-proteins
- ❖ There is no specific cause for producing autoantibodies
- ❖ Women have higher tendency for developing autoantibodies
- ❖ Pregnant women have 5 times higher incidents of autoantibodies than non-pregnant women
- ❖ Genetic factors such as specific HLA types can increase the risk of developing autoimmune diseases

ANTI-JK^a AUTO-ANTIBODY:

Antibodies against Jk^a antigens produced by a Jk^a positive person

Rare cases of anti-Jk^a autoantibody had been previously identified and documented. However, those cases were believed to be an alloantibody to a rare Jk^a subtype

The patient has a Jk^{a+}, Jk^{b+} phenotype, therefore a true Jk^a auto-antibody

Cell #	Rh-hr										KELL					DUFFY		KIDD			Sex	LEWIS			MNS				P	LUTHERAN		Special Antigen Typing	Test Results			
	Rh-hr	Donor Number	D	C	E	c	e	f	C ^w	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	P ₁	Lu ^a	Lu ^b	Cell #		Result			
2	rr	330136	0	0	0	+	+	+	0	0	+	+	0	+	/	+	+	+	0	+	0	+	+	+	+	+	0	0	0	0	+	0	+	12	S2	
3	rr	321428	0	0	0	+	+	+	0	0	0	+	0	+	/	+	0	+	+	0	+	0	+	+	0	+	0	+	0	0	0	+	0	+	13	
4	rr	321154	0	0	0	+	+	+	0	0	+	+	0	+	/	+	+	0	0	+	+	0	+	+	+	+	+	0	0	0	+	0	+	14	0	
5	R2R2	331645	+	0	+	+	0	0	0	0	0	+	0	+	/	+	+	0	+	+	0	0	+	+	+	+	+	+	+	+	+	+	0	+	15	
6	R2R2	305746	+	0	+	+	0	0	0	0	0	+	0	+	0	+	+	+	0	+	+	0	+	+	+	+	+	0	+	0	+	0	+	16	0	
7	R2R2	306065	+	0	+	+	0	0	0	0	0	+	0	+	0	+	0	+	+	0	0	0	0	0	+	+	+	0	0	0	+	0	+	17		
8	R1R1	330452	+	+	0	0	+	0	0	0	0	+	0	+	/	+	0	+	+	0	+	0	0	0	+	+	0	+	0	0	+	0	+	18		
9	R1R1	329391	+	+	0	0	+	0	0	0	0	+	0	+	/	+	+	0	+	0	+	0	+	0	+	+	0	0	0	0	+	0	+	19		
10	RzR1	118099	+	+	+	0	+	0	0	0	0	+	0	+	0	+	+	+	+	+	+	+	0	+	+	0	+	+	+	+	+	0	+	20		
11	r'r	331405	0	+	0	+	+	+	0	0	0	+	0	+	/	+	0	+	+	+	+	+	0	+	0	+	0	+	+	+	+	0	+	21		
12	R1R1	320208	+	+	0	0	+	0	0	0	+	0	0	+	/	+	+	0	+	+	+	0	+	+	0	+	+	+	+	+	+	+	0	+	22	
Patient Cells																																				

Cell #	Rh-hr										KELL					DUFFY		KIDD			Sex	LEWIS			MNS				P	LUTHERAN		Antigen Typing	Test Results						
	Rh-hr	Donor Number	D	C	E	c	e	f	C ^w	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	P ₁	Lu ^a	Lu ^b	Cell #			Result					
1	R1wR1	307810	+	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	0	0	0	+	0	+	+	+	+	+	+	+	+	+	+	+	+	HLA+	1		
2	R1R1	329234	+	+	0	0	+	0	0	0	+	+	0	+	/	+	+	0	0	+	+	0	+	0	+	0	+	0	+	+	+	+	+	+	+	+	2	0	
3	R2R2	331572	+	0	+	+	0	0	0	0	0	+	0	+	/	+	0	+	+	+	0	0	0	+	+	+	+	0	+	+	+	+	+	+	+	+	3		
4	Ror	320647	+	0	0	+	+	+	0	0	0	+	0	+	/	+	0	+	+	0	0	0	0	0	0	+	+	+	+	+	+	+	+	+	+	+	4		
5	r'r	315715	0	+	0	+	+	+	0	0	0	+	0	+	/	+	0	+	0	+	0	0	+	+	+	+	+	0	0	+	+	+	+	+	+	+	@	5	
6	r'r	71256	0	0	+	+	+	+	0	0	0	+	0	+	0	+	+	0	0	+	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	@	6	
7	rr	321969	0	0	0	+	+	+	0	0	+	+	0	+	/	+	0	+	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+	+	+	@	7	
8	rr	330667	0	0	0	+	+	+	0	0	0	+	0	+	/	+	+	+	0	+	+	0	+	+	+	0	+	+	+	+	+	+	+	+	+	+	+	8	
9	rr	329160	0	0	0	+	+	+	0	0	0	+	0	+	/	+	0	0	+	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	9	
10	rr	306978	0	0	0	+	+	+	0	0	0	+	0	+	0	+	0	+	+	0	+	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	+	10	
11	R1R1	330550	+	+	0	0	+	0	0	0	0	+	0	+	/	+	0	+	+	0	+	0	+	+	0	+	0	+	0	+	0	+	0	+	0	+	+	11	
Patient Cells																																							

*EXTRA
PANELS
TO RULE
OUT
"E,K,N":*

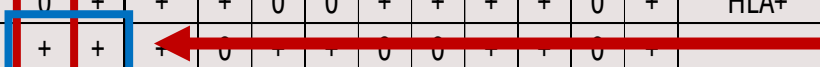
Mode of Reactivity	37°C/Antiglobulin	Antiglobulin	Variable	Cold	Var.
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ANTIBODY ID PANEL:

cell #	Rh-hr	Rh-hr								Kell					Duffy		Kidd		Sex linked	Lewis			MNS				P	Lutheran		special Ag	cell #	S2	
		D	C	E	c	e	f	C ^w	V	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Xga	Le ^a	Le ^b	S	s	M	N	P1	Lu ^a	Lu ^b				
1	R1wR1	+	+	0	0	+	0	+	0	0	+	0	+	/	+	+	+	+	0	+	0	+	0	+	0	+	0	0	+	+		1	1+
2	R1R1	+	+	0	0	+	0	0	0	+	+	0	+	/	+	0	+	+	0	+	0	+	0	+	0	+	s+	0	+	HLA+	2	1+	
3	R2R2	+	0	+	+	0	0	0	0	0	+	0	+	/	+	0	+	+	+	0	0	0	+	+	+	+	0	+	+		3	1+	
4	R0r	+	0	0	+	+	+	0	0	0	+	0	+	/	+	+	0	+	0	+	0	0	0	+	+	+	s+	0	+		4	1+	
5	r'r	0	+	0	+	+	+	0	0	0	+	0	+	/	+	+	0	+	0	0	+	0	+	+	+	+	s+	0	+		5	0	
6	r''r	0	0	+	+	+	+	0	0	0	+	0	+	0	+	+	+	0	+	+	0	+	+	+	+	+	+	0	+	HLA+	6	0	
7	rr	0	0	0	+	+	+	0	0	+	+	0	+	/	+	0	+	+	+	+	0	+	0	+	+	0	+	0	+		7	1+	
8	rr	0	0	0	+	+	+	0	0	0	+	0	+	/	+	+	+	+	0	+	+	0	+	+	+	0	+	0	+	HLA+	8	2+	
9	rr	0	0	0	+	+	+	0	0	0	+	0	+	0	+	+	+	0	+	+	+	0	0	+	+	+	+	0	+	HLA+	9	0	
10	rr	0	0	0	+	+	+	0	0	0	+	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	s+	0	+		11	0	
12	patient cells																														12	1+	

ANTIBODY ID PANEL W/ ELUATE:

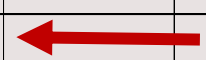
cell #	Rh-hr	Rh-hr								Kell					Duffy		Kidd		Sex linked	Lewis			MNS				P	Lutheran		special Ag	cell #	Test results		
		D	C	E	c	e	f	C ^w	V	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Xga	Le ^a	Le ^b	S	s	M	N	P1	Lu ^a	Lu ^b			S2		S1 (Eluate)
1	R1wR1	+	+	0	0	+	0	+	0	0	+	0	+	/	+	+	+	0	+	0	+	0	+	0	+	0	+		1	1+		3+		
2	R1R1	+	+	0	0	+	0	0	0	+	+	0	+	/	+	0	+	0	+	0	+	0	+	0	+	s+	0	+	HLA+	2	1+		3+	
3	R2R2	+	0	+	+	0	0	0	0	0	+	0	+	/	+	0	+	+	0	0	0	+	+	+	+	0	+	+	3	1+		3+		
4	R0r	+	0	0	+	+	+	0	0	0	+	0	+	/	+	+	0	+	0	0	0	+	+	+	s+	0	+		4	1+		3+		
5	r'r	0	+	0	+	+	+	0	0	0	+	0	+	/	+	+	0	0	+	0	+	+	+	+	s+	0	+		5	0		1+		
6	r''r	0	0	+	+	+	+	0	0	0	+	0	+	0	+	+	0	+	+	0	+	+	+	+	+	0	+	HLA+	6	0		2+		
7	rr	0	0	0	+	+	+	0	0	+	+	0	+	/	+	0	+	+	0	0	+	+	0	+	0	+		7	1+		3+			
8	rr	0	0	0	+	+	+	0	0	0	+	0	+	/	+	+	+	+	0	+	+	+	0	+	0	+	HLA+	8	2+		3+			
9	rr	0	0	0	+	+	+	0	0	0	+	0	+	0	+	+	0	+	+	0	0	+	+	+	+	0	+	HLA+	9	0		1+		
10	rr	0	0	0	+	+	+	0	0	0	+	0	+	/	+	+	0	+	+	0	0	+	+	+	+	0	+		10	0		3+		
11	R1R1	+	+	0	0	+	0	0	0	0	+	0	+	/	+	0	+	0	+	0	+	+	0	+	s+	0	+		11	0		1+		



cell #	Rh-hr	Rh-hr								Kell					Duffy		Kidd		Sex linked	Lewis			MNS				P	Lutheran		special Ag	cell #	Test results		
		D	C	E	c	e	f	C ^w	V	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Xga	Le ^a	Le ^b	S	s	M	N	P1	Lu ^a	Lu ^b			S2		S1 (last wash)
1	R2R2	+	+	0	0	+	0	0	0	+	+	0	+	/	+	0	+	+	0	+	+	+	0	+	0	+		1	2+		0			
2	R1R1	+	0	+	+	0	0	0	0	0	+	0	+	/	+	+	0	+	+	+	+	+	+	+	0	+		2	1+		0			

ANTIBODY ID PANEL W/ ELUATE:

cell #	Rh-hr	Rh-hr								Kell					Duffy		Kidd		Sex linked	Lewis		MNS				P	Lutheran		special Ag	cell #	Test results		
		D	C	E	c	e	f	C ^w	V	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Xga	Le ^a	Le ^b	S	s	M	N	P1	Lu ^a	Lu ^b			S2	
1	R1wR1	+	+	0	0	+	0	+	0	0	+	0	+	/	+	+	+	0	+	0	+	0	+	0	+	0	+		1	1+		3+	
2	R1R1	+	+	0	0	+	0	0	0	+	+	0	+	/	+	0	+	0	+	0	+	0	+	0	+	s+	0	+	HLA+	2	1+		3+
3	R2R2	+	0	+	+	0	0	0	0	0	+	0	+	/	+	0	+	+	0	0	0	+	+	+	+	0	+	+		3	1+		3+
4	R0r	+	0	0	+	+	+	0	0	0	+	0	+	/	+	+	0	+	0	0	0	+	+	+	s+	0	+		4	1+		3+	
5	r'r	0	+	0	+	+	+	0	0	0	+	0	+	/	+	+	0	0	+	0	+	+	+	+	s+	0	+		5	0		1+	
6	r''r	0	0	+	+	+	+	0	0	0	+	0	+	0	+	+	0	+	+	0	+	+	+	+	+	0	+	HLA+	6	0		2+	
7	rr	0	0	0	+	+	+	0	0	+	+	0	+	/	+	0	+	+	0	+	0	+	+	0	+	0	+		7	1+		3+	
8	rr	0	0	0	+	+	+	0	0	0	+	0	+	/	+	+	+	0	+	+	0	+	+	0	+	0	+	HLA+	8	2+		3+	
9	rr	0	0	0	+	+	+	0	0	0	+	0	+	0	+	+	+	0	+	+	0	0	+	+	+	0	+	HLA+	9	0		1+	
10	rr	0	0	0	+	+	+	0	0	0	+	0	+	/	+	+	0	+	+	0	+	0	0	+	+	0	+		10	0		3+	
11	R1R1	+	+	0	0	+	0	0	0	0	+	0	+	/	+	0	+	0	+	0	+	+	0	+	s+	0	+		11	0		1+	



SALINE REPLACEMENT:

cell #	Rh-hr	Rh-hr								Kell				Duffy		Kidd		Lewis		MNS				P		Lutheran		Sex linke	special Ag	cell #	Test results		
		D	C	E	c	e	f	C ^w	V	K	k	Kpa	Kpb	Jsa	Jsb	Fya	Fyb	Jka	Jkb	Le ^a	Le ^b	M	N	S	s	P1	Lu ^a	Lu ^b			Xga	Wr ^a	IS
1	R1wR1	+	+	0	0	+	0	+	/	0	+	0	+	0	+	0	+	0	0	+	+	0	+	+	0	+	+	+	0	1	RL		W+
2	R1R1	+	+	0	0	+	0	0	/	+	+	0	+	0	+	0	+	+	0	+	+	0	+	w+	0	+	+	0	2	RL		0	
3	R2R2	+	0	+	+	0	0	0	/	0	+	0	+	0	+	0	+	0	+	0	+	0	+	+	0	+	+	*+	3				
4	r'r	0	+	0	+	+	+	0	0	0	+	0	+	0	+	+	+	+	0	+	+	+	0	0	0	+	+	0	4				
5	r''r	0	0	+	+	+	+	0	/	0	+	0	+	/	+	+	+	+	0	+	+	0	+	0	0	+	+	*+	5				
6	R0r	+	0	0	+	+	+	0	/	+	+	0	+	0	0	0	+	0	0	0	0	+	0	+	+	0	+	+	6				
7	rr	0	0	0	+	+	+	0	/	+	+	0	+	/	+	+	+	+	0	+	+	0	+	w+	0	+	+	*+	7				
8	rr	0	0	0	+	+	+	0	/	0	+	0	+	0	+	0	+	+	+	+	+	0	+	+	0	+	+	0	8				
9	rr	0	0	0	+	+	+	0	0	0	+	0	+	0	+	+	+	+	0	0	+	+	0	+	0	+	+	0	9				
10	rr	0	0	0	+	+	+	0	0	0	+	+	+	0	+	+	+	+	0	+	+	0	+	+	0	+	+	0	10				
11	R1Rz	+	+	+	0	+	+	0	/	0	+	0	+	/	+	+	+	0	+	+	0	+	0	+	0	+	+	*+	11				
12	R1R1	+	+	0	0	+	+	+	/	0	+	0	+	0	+	+	+	0	+	+	+	+	+	0	0	+	+	0	12				
13	rr	0	0	0	+	+	+	0	/	+	0	0	+	/	+	+	+	0	+	0	+	0	+	+	0	+	*0	13	RL		0		
14	R2R2	+	0	+	+	0	0	0	/	+	+	0	+	/	+	+	+	0	+	+	+	+	+	0	0	+	+	*+	14				
15	R2Rz	+	+	+	+	0	0	0	/	0	+	0	+	0	+	+	+	0	0	+	+	+	0	+	+	0	+	+	15				
16	rr	0	+	0	+	+	+	0	/	0	+	0	+	0	0	0	+	+	0	+	+	0	+	+	0	+	*0	16					
17	patient cells																											17	RL	0	0		












THE SIGNIFICANCE OF ANTI-JK^a AUTO-ANTIBODY

Anti-Jk^a is a warm
reactive IgG
antibody

Anti-Jk^a is
associated with mild
HDFN

Was the patient
having symptoms
of hemolysis?!

CBC RESULTS FOR THE MOTHER:

	1/31/24	2/1/24	Reference Range
WBC	6.9	13.7 	4.5-11
RBC	3.4 	2.9 	3.8-5.2
Hgb	10.5 	9.0 	12-16
Hct	31.3 	26.0 	36-48
MCV	92.1	89.7	80-100
MCH	30.9	31.0	26-34
MCHC	33.5 	34.6 	32-36
Plt	132.0 	133.0 	150-450
MPV	10.7	10.4	7.5-11.5
RDW	12.5	12.4	12-15

DID HDFN HAPPEN?

Cord blood DAT:

DAT IgG: Negative

Cord blood Ag
typing for Jk^a:

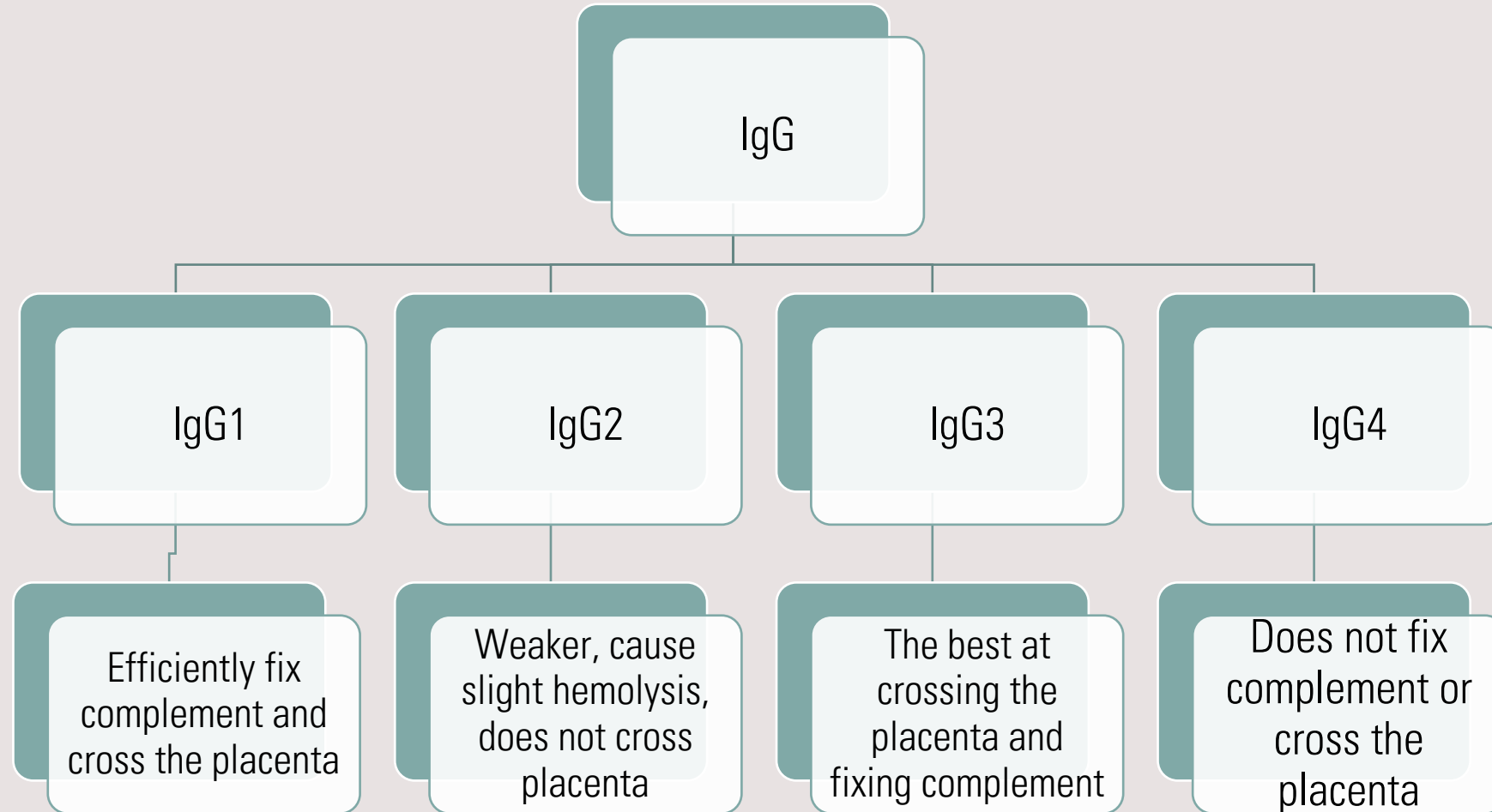
Cord Blood was Jk^a positive

Why was the DAT
negative?

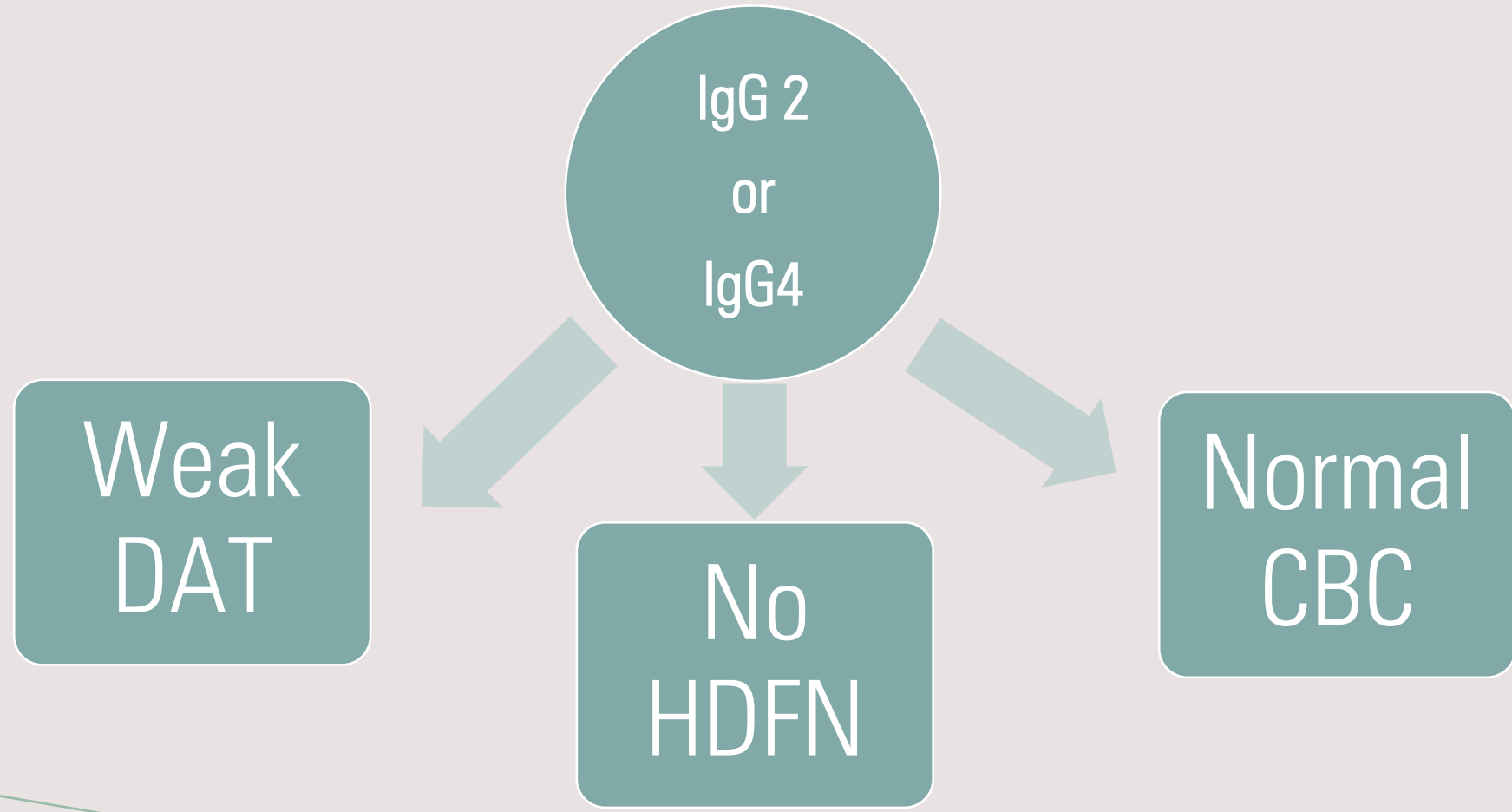
The maternal anti-Jk^a autoantibodies did not cross the placenta

Test	Measured value	Reference range
Total Bilirubin	5.1 mg/dl	0.3-11.9
Direct Bilirubin	<0.2 mg/dl	<0.4

IgG Subclasses:



IgG SUBCLASSES:



TREATMENT:

- No treatment is required giving the absence of hemolytic anemia
- If the patient needs blood transfusion in the future, she must receive Jk^a negative Blood to prevent the destruction of the transfused RBC



REFERENCE:

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4678310/#B13>
- <https://www.nih.gov/news-events/nih-research-matters/understanding-sex-differences-autoimmune-disease#:~:text=The%20activity%20of%20a%20type,and%20testing%20for%20autoimmune%20diseases.>
- <https://www.ncbi.nlm.nih.gov/books/NBK551523/>
- Association for the Advancement of Blood & Biotherapies, *Technical Manual 21st edition*, 2023