



Immunohematology Case Studies 2017 - 9

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Clinical History



- 77 year old male with no information about clinical history needing blood transfusion

Immunohematology Laboratory History



- Referring laboratory had a negative antibody screening and a positive DAT
- Referred for DAT specification and elution
- Blood group O, D+C+E-c-e+, K-

Current Sample Presentation Data



ABO/Rh: mixed field

DAT: positive with mixed field

Antibody Screen Method: IAT in Gel Antiglobulin (ID Gel AHG) card with four untreated test cells in LISS and four cells treated with papain in neutral ID gel cards were used simultaneously (in-house)

Antibody Screen Results:

No reactivity

Current Sample Presentation Data



ABO/Rh method:

DiaClon ABO/D card, DiaClon Rh-Subgroups + K card and monoklonal anti-A, -B, -D, -C, E-, -c and -e antibodies for tube testing

ABO/Rh Results:

DiaClon cards: mixed field with anti-A, -B, -AB, -C, -E, -c and -K and controls, positive reactions with anti-D, -C and -e

Tube testing: negative results with anti-A, -B, -E and -c, positive reactions with anti-D, -C, -e and -K

Current Sample Presentation Data



DAT method:

Screening: DAT in polyspecific ID AHG cards (anti-IgG and -C3d) and AHG (anti-IgG) cards

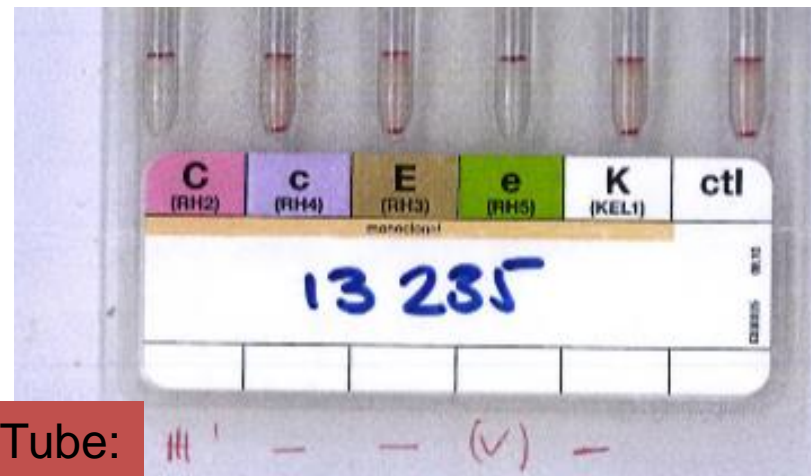
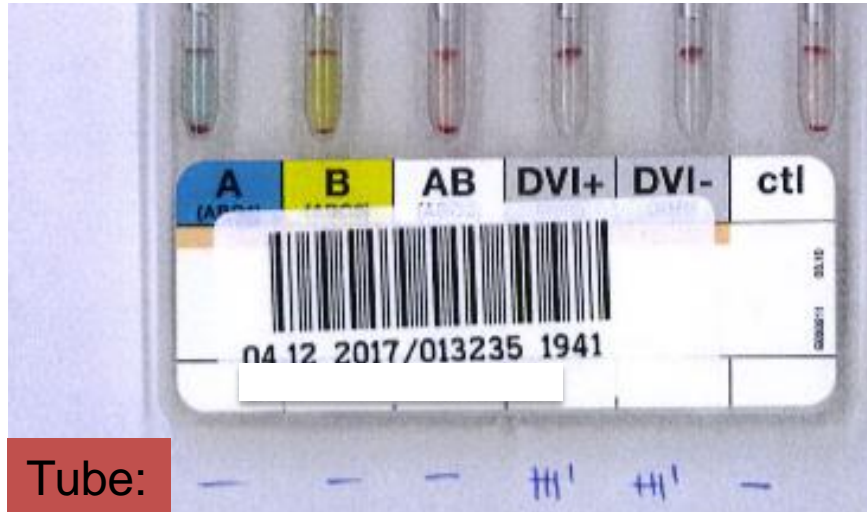
Specification: DAT in ID neutral cards using anti-IgG, -IgA, -IgM and -C3d

DAT Results:

Polyspecific: strong positive with mixed field

Specification: IgG: titer >1000 with mixed field, C3d and IgM: strong positive with mixed field, IgA: positive with mixed field

Results Blood Grouping



Results DAT



DAT	ID	4	8	16	32	64	128	256	512	1000
Polyspecific	(+++)*									
IgG	+++*	(+++)*		+*		+*	+++*	++*		(+++)*
IgA				+*						
IgM			+++*							
C3d		(+++)*								
* Mixed field with streaks										

Blank value with patients RBCs in neutral ID card: (+++)*

Results eluate



Nr.	D	C	c	E	e	Cw	K	k	Fya	Fyb	Jka	Jkb	Lea	Leb	P1	M	N	S	s	ID/IAT
1	+	+	0	0	+	0	0	+	0	w	0	+	+	0	+	+	+	+	0	neg
2	+	0	+	+	0	0	+	+	+	0	+	0	0	+	+	+	+	+	+	neg
3	+	+	0	0	+	+	0	+	0	+	0	+	0	w	+	0	+	0	+	neg
4	0	0	+	0	+	0	0	+	+	0	0	+	0	0	+	+	0	0	+	neg
5	0	+	+	0	+	0	0	+	+	0	+	+	0	+	+	0	+	0	+	neg
6	0	0	+	+	+	0	0	+	0	+	+	0	0	+	0	+	+	+	0	neg
7	0	0	+	0	+	0	0	+	+	+	+	0	0	+	+	+	+	+	+	neg

(In-house panel)

Question



- 1) What could be the reasons for the mixed field reactivity observed (ABO/Rh and DAT)?

Challenge with the Current Presentation



What is the medical history of this patient?
Has the patient had recent transfusions?

Possible Answers and Next Steps



As the DAT specification showed continuous positive reactions a “blank value” was performed using patient’s RBCs in neutral ID cards.

The result showed strong positive reactions with mixed field, which could be due to auto-agglutination (cold or warm reacting auto-antibodies?).

Possible Answers and Next Steps



Medical history: no information about recent transfusions, however the patient has a CLL and leukocytosis.

→ Total leukocytes $>400 \times 10^9/L!$
(ref. range $4-10 \times 10^9/L$)

Question



2) What would be the next step?

Further Work



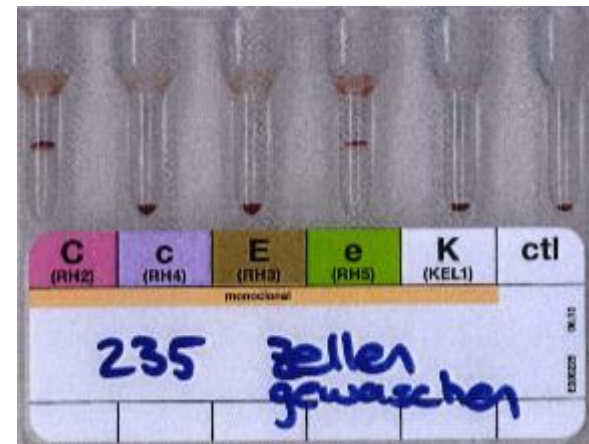
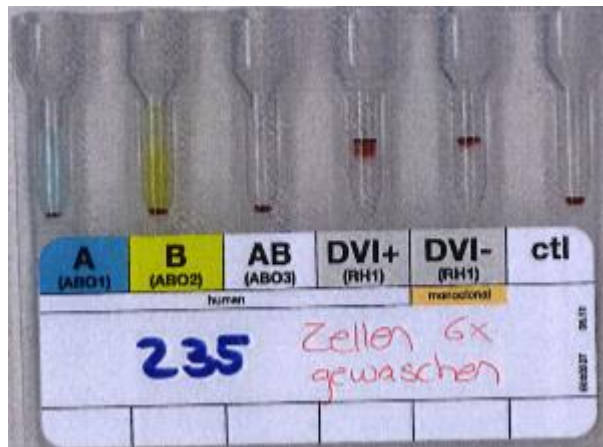
In order to confirm the presence of warm IgM autoantibodies on the patients RBCs, the RBCs can be treated with dithiothreitol (DTT). DTT destroys the IgM molecules fixed on the RBCs and a negative result would be obtained.

The mixed fields observed could also be due to the leukocytosis (total leukocytes $>400 \times 10^9!$). If this is the case, the interference of leukocytes could be eliminated by simply washing the RBCs several times.

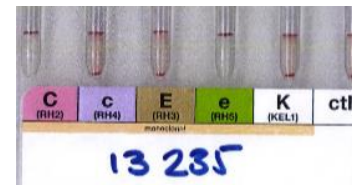
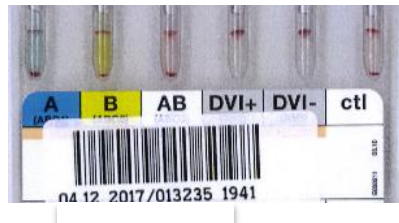
Further Testing Results and Interpretations



Blood grouping with RBCs from the bottom of the tube and washed 6 times with saline:



Before:



Further Testing Results and Interpretations



DAT with RBCs from the bottom of the tube and washed 6 times:

DAT	ID	4	8	16	32	64	128	256	512	1000
Polyspecific	-									
IgG	-									
IgA				-						
IgM			-							
C3d		-								

Blank value with patients RBCs in neutral ID card: neg

Summary and Conclusions



- This case may appear as quite simple, as it does not deal with complex serology or molecular testing
- It is often forgotten how important it is for the immunohematology laboratory to know about clinical history
- This should be a helpful reminder about the interference of WBCs in red cell antibody work

Lessons Learned by the Case



Without clinical information, even the simplest case can be difficult to solve.