

“UNUSUAL SUSPECTS”

Or...Who Done It?

Antibodies, like Criminals, can sometimes surprise us!

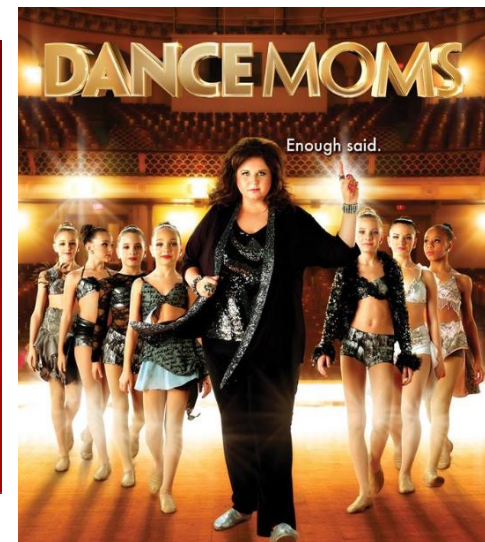
Beth Jones, MT(ASCP)BB
Saint Luke's Hospital, KC,MO

BLOOD BANKERS ARE DETECTIVES!

WE CAN BE “SHOCKED” WHEN THE CULPRIT IS UNUSUAL



Beth's "picks" that sharpens her mind!!!



ANTIBODIES- “CRIMINALS”- LOOK BACK STUDY, SLH, JAN 1 –DEC 31, 2014

- Reviewed antibodies identified by **SLH Blood Bank staff** for the year 2014
- Work ups for the System: **SLH, SLE, SLS, SLN, WMH, HMC, CMH, Anderson and Bates Co.**
- Newly identified or if previously identified within the year, only considered once (*SLH policy: TS vs TX for AbID*)
- -D due to RhoGam not considered (FYI: for 2014 SLH performed ~ 240 r sets)
- SLH primary method for AbID: **Gel**



ANTIBODIES- “CRIMINALS”- LOOK BACK STUDY, SLH, JAN 1 –DEC 31, 2014

- Antibodies identified at the “local” crime lab
aka: SLH: -D,-C,-E, -c, -e, -K, -Fy^a, -Fy^b, -Jk^a, -Jk^b, -M, -N, -S, -s, -Le^a, cold antibodies, non-specific antibodies
- Antibodies identified by the “FBI”, aka CBC IRL:
-G, -f, -V, -Wr^a, HLA antibodies, warm auto antibodies, warm/cold auto antibodies
- Study: published in *Transfusion*, April 2006

“Additional red blood cell alloantibodies after blood transfusions in a nonhematologic alloimmunized patient cohort: is it time to take precautionary measures?” Schonewille, van de Watering, Brand

A 20-year retrospective multicenter study was performed analyzing additional alloantibody formation, against the RH, KELL, FY, JK, and MNS blood group systems



SLH STATS: -E, -K, -M, -D THE HUSBAND/BOYFRIEND!



- 2014 SLH: 236 Antibodies Id'd:

Antibody	Total number	% of Total
-E	59	25%
-K	38	16%
-M*(gel)	32	13.5%
-D	19	8%





SLH STATS: -Fy^a, -Jk^a, -C,-Le^a, -c THE WIFE/GIRLFRIEND!

- 2014 SLH: 236 Antibodies Id'd:

Antibody	Total Number	% of Total
-Fy ^a	21	8.8%
-Jk ^a	17	7.2%
-C	14	6%
-Le ^a	12	5%
-c	10	4.2%



SLH STATS: -S, -Jk^b, -e, -Fy^b, -s, -N

“UNUSUAL” SUSPECTS:

NEIGHBOR, EMPLOYEES, BEST FRIENDS!

- 2014 SLH: 236 Antibodies Id'd:

Antibody	Total Number	% of Total
-S	6	2.5%
-Jk ^b	3	1.3%
-e	2	0.8%
-Fy ^b	1	0.4%
-s	1	0.4%
-N	1	0.4%



CASE: ATTACK BY “UNUSUAL SUSPECTS”

“Victim”/Patient Case History

- 73 year old Hispanic Female
- Visits our outpatient infusion center on 2/18/14
- Diagnosis: **Anemia**
- Hgb: **6.9 g/dL**, 2 units **packed rbc**s requested
- History: Infiltrating ductal carcinoma of Left Breast, 2008
- Patient **jaundiced** and very weak
- Possible cirrhosis: **↑ALT and AST**, **Hep A Ab +**, however HCV Ab and HBs Ab neg



BLOOD BANK

“BACKGROUND CHECK”

Date	Type and Screen Results	Units RBCs Transfused
2/18/14	O positive, negative Ab Sc	2 units, electronic xm
4/11/14	O positive, negative Ab Sc	2 units, electronic xm
**4/29/14 <i>(please refer to panel)</i>	O positive, positive Ab Sc, anti-Jkb with extraneous cells, <i>negative auto control</i> : sent to CBC IRL for confirmation: ID of anti -Jkb and probable anti -Fyb	2 units sent from CBC, Jkb & Fyb neg, xm compat in GEL/AHG

THE CRIME SCENE HAS BEEN ESTABLISHED!

Unusual suspects???



Anti-Jk^b (28% compatibility)

+

Anti-Fy^b (17% compatibility)

=

.28 x .17 x 100 = 4.7 % compatibility

*But wait... another unusual suspect is about
to enter this saga!*



WE THOUGHT THE CASE WAS CLOSED... WE WERE WRONG!

- On 5/23/14, we received an order for **2 units RBCs** for our patient
- Her Ab screen was positive, and per our protocol, we ordered Ag negative (Jkb & Fyb neg) to be crossmatched in gel
- The “**crime scene**” looked bad- units appeared incompatible, 2+ in Gel
- Panel was performed... **EVERYTHING** was positive (*including autocontrol*)
- Sent to the “FBI”, aka CBC IRL for a workup
- We anxiously waited for the results....



WAS THIS PRE-MEDITATED??

CBC's report:

Patient now demonstrating
anti-f & warm autoantibody

f antigen:

- Historically thought of as compound antigen (**ce**)
- Expressed on RBCs with **c** and **e** antigens on the same haplotype (**in cis**)
- Rhce allele codes for **c, e, and f**

D	C	E	c	e
+	+	+	+	+

Patient probable **R₁R₂**
(DcE/DcE): most likely received R₀ (Dce) or r (dce) somewhere along the way

Unusual Suspect??

Transfuse patients demonstrating anti-f:

R₁R₁ or R₂R₂ blood

(DcE/DcE) or (DcE/DcE)

18%

2%

Jkb- & Fyb-

Jkb- & Fyb-

4.7%

4.7%

.847 %

.094%

CBC sent 2 units (same donor, part A and B),

R₁R₁, K-, Fy^b-, Jk^b- unit, compatible with LISS

(at this point they could not rule out anti-K)





-Jkb,
-Fyb,
-f

Book Em
Danno !



DON'T RUSH TO JUDGMENT YET!

ANOTHER "S" HADY SUSPECT IS INVOLVED!

- 5-23 thru 6-21-14, she received 5 additional units of **Jk^{b-}, Fy^{b-}, K-, f-(E-c-) blood :LISS**
x-matches compatible for 3 of the units, incompatible with 2 microscopically- we issued as "least incomp"
- On 6-25, antigen negative blood was 2+ incompat with LISS
- Sent to CBC IRL on 6-25

- SLH protocol: Patients demonstrating a Warm Auto Ab: Ag match as close as possible:
- Community Blood Center: Patient Ag Typing Results:

Pt Ag Type	C	E	c	e	K
Fy ^a	Fy ^b	Jk ^a	Jk ^b	S	s
+	-	+	-	-	+

IRL Report from 6-25-14:
Warm Auto and **probable anti-S !**
Really??? Unusual... YES



LATEST “SUSPECT” UPDATE:

-Jkb, -f, PROBABLE -Fyb, -S AND A WARM AUTO

○ **.28 x .17 x .45 x**

R1R1 (.18)

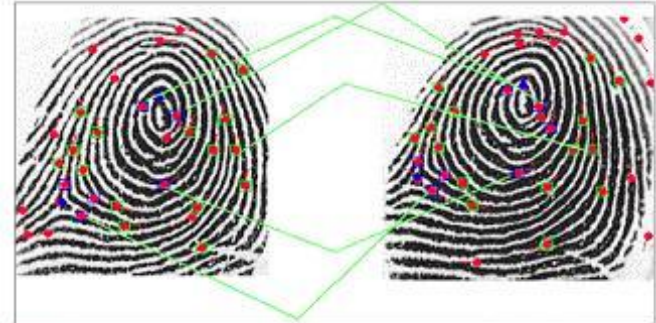
= **0.39% compatibility**

○ **.28 x .17 x .45 x**

R2R2 (.02)

= **0.043% compatibility**

Thank goodness for
CBC's IRL
department locating
matching
“fingerprints”,
aka donors for us!!



LATEST “RAP” SHEET: AKA, **BB** HISTORY

Date	Units requested	Compat (LISS)	IRL workup
6-27-14	1	Yes	Yes
7-6-14	2	No	No*
9-7-14	1	No	Yes†
9-14-14	1	No	No*
9-26-14	1	Yes	Yes†
10-2-14	1	Yes	No*
11-6-14	1	Yes	Yes†
11-23-14	1	Yes	No*
1-22-15	1	Yes	Yes†
3-4-15	1	Yes	No-oops!

* < 4 weeks since last transfusion (go with antigen matched blood); if incomp in LISS, have doctor sign for blood
 † > 4 weeks since last transfusion





FINAL VERDICT!

- Beth doing her detective work, finding “microscopic proof” in a Gel Card!



- Our patient, “the repeat offender” has not been back for a transfusion as of 4-7-15!
- According to our outpatient transfusion department, she comes in for an **Iron infusion** every other week and is doing fine
- That’s all good with us... but next time she needs blood, we may be dealing with a misdemeanor or a felony....
- *Who knows? That’s what makes our jobs interesting!*





THANK YOU!



- **Blood Bankers** are detectives, we know this is true
- Trying to solve compatibility issues with a panel or two
- So if something “**UNUSUAL**” comes your way
- Bite the bullet, be strong, speak up and say,
- “I’m tired of boring anti-E’s, Kell’s and D’s
- If I can’t figure it out, I’ll ship it to CBC!”
- The moral of this poem is simple and true
- *Don’t always hope for the ordinary, it’s fun to workup something new!*

