

Winter 2006



Page 2

Case Study??

Page 3

Featured Article

Page 4

Featured Article Cont.

KABB Spring Meeting
Information

Page 5

Case Study Continued

AABB Annual Meeting
Information

Page 6

Word Find

President's Message-Karla Smith MT(ASCP)SBB

It has been an honor to serve as President of the Kentucky Association of Blood Banks. I would like to take this opportunity to thank our Board Members and Officers for their continued support and time they have contributed to the Association this year.

other areas of the laboratory whether it is for their current position or to fulfill requirements toward the ASCP's Certification Maintenance Program (CMP). I encourage you to become more involved with KABB and the educational experiences that may be gained from our Association.

Each year, KABB continues to offer excellent opportunities for continuing education credits in blood banking, quality and other administrative areas. Our joint meeting with the Kentucky Society for Clinical Laboratory Sciences provides our attendees additional opportunities to obtain C.E. in

If you have any suggestions, ideas for future educational forums, comments or would like to become more involved with KABB, please contact any of the board members or me at karla@disneydog.com

President-Elect's Message: Donna Ratliff MT(ASCP)

I would like to begin by saying I am proud to be serving as President of KABB. I am sure this will be an exciting year. KABB is an organization in which I have always enjoyed being a member. I worked 15 years in the laboratory as a general technologist before switching careers. I have taught in the Clinical Laboratory Technician Program at Somerset Community College since 1994. Immunohematology is always one of the favorite classes to teach in the program.

I would like to encourage all KABB members to become involved. We would love to have you help anytime. There are many different opportunities in the organization to become an active member. We have an education committee who would love to have suggestions for the meeting sessions. Or maybe, you would be interested in speaking at the meetings. Every blood banking department differs and it is always fun to hear someone else tell their encounters.

We have two meetings planned for this year. The spring meeting is being co-sponsored with KSCLS and is approaching quickly. The theme is "Power Up for Knowledge". The meeting is to be held in Lexington at the Crowne Plaza Hotel-The Campbell House March 7th and 8th. For reservations call 1-859-255-4281 and mention you are with KABB/KSCLS for the \$89.00 rate. We would love to have you attend. There will be continuing education units available for laboratory personnel and for nursing so please let your nursing friends know and encourage them to attend this year's meeting. Additional information can be found on the KABB website www.kabb.org.

Our second meeting this year will be September 16, 2006 at Cumberland Falls State Park in Corbin, Ky. There will be a hospitality reception Friday, September 15, 2006 beginning at 8 pm. The meeting will be Saturday the 16th with breakfast and registration beginning at 8 am. More details about the fall meeting will be available on our website as further plans are made.

Please join KABB for these meeting. We look forward to seeing you!!!

KABB 2006 Award Applications

**To print an application and/or get more information
please visit our website: www.kabb.org**



Case Study:

Written by: Karla Smith, MT(ASCP)SBB, Reference Laboratory Technologist, Central Kentucky Blood Center, Lexington, KY.

Acknowledgements: This case was provided by St. Claire Regional Medical Center, Morehead, KY.

Patient: 83-year-old Caucasian Female was admitted to the hospital for Carotid Endarterectomy.

Patient's medical history includes asymptomatic Carotid Artery Stenosis, hypertension, arthritis, and peripheral vascular disease. She has had 3 pregnancies and has never received any blood products.

Medications: Toprol, Altace, Lipitor, Plavix, Hydrochlorothiazide

Specimens were sent to the Laboratory 4 days prior to surgery. The Chemistry and Hematology results were unremarkable.

Preliminary Blood Bank Laboratory Results:

Forward typing					Reverse typing		
Anti-A	Anti-B	Anti-A,B	Anti-D	Control	A1 Cells	A2 Cells	B Cells
4+	0	4+	3+	0	0	NT	2+

Serum test with:	Phase				
	PeG			FICIN	
	IS	37°C	AHG	37°C	AHG
I	0	NT	1+	H	+/-
II	0	NT	1+	H	+/-
Auto Control	0	NT	0v	NT	NT

NT= not tested, H=hemolysis

DAT= negative

A panel was performed; patient's serum reacted with all panel cells demonstrating the same strength reactivity as shown with the above table. The panel reactivity seen is characteristic of an antibody to a high incidence antigen.

The next step performed was a patient phenotyping for common antigens. The patient typed negative for E, K, P1, and Le^a.

A selected cell panel was run using cells negative for different high incidence antigens. All panel cells reacted except the Vel negative cell. The patient was typed and found negative for the Vel antigen. Using rare Vel negative cells, we were able to rule out the possibility of other common underlying alloantibodies.

Conclusion: This patient typed A Positive with an Anti-Vel.

Antibody facts: Anti-Vel is a rare antibody directed against the high incidence antigen Vel. Approximately 1 in 4000 people worldwide are Vel negative. In Sweden and Norway, the incidence is 1 in 1500.¹

This antibody is resistant to treatment with enzymes and chemicals. It is both IgM and IgG and can bind complement. Anti-Vel can be clinically significant and is capable of causing hemolytic transfusion reactions. CAUTION must be taken because this antibody can be prewarmed away! It can also present as an autoantibody.²

Questions:

1. What is an antibody to a high incidence antigen?
2. In this case, we identified an Anti-Vel. Which other antibodies are likely to give this type of reactivity?
3. Is performing a phenotype on this patient useful in antibody identification? If so, how?
4. How do you know that the positive reactions seen with this patient isn't due to an autoantibody?
5. How do you explain the patient's antibody findings?
6. The patient is scheduled for surgery. The surgeon orders a 4-unit crossmatch. What should the Blood Bank do? What considerations should be made for this patient both during surgery and for postoperative care?

Continued on Page 5



Oh no! It's an antibody to a high prevalence antigen

Sandra J. Nance, Director, American Red Cross Biomedical Services
Immunohematology Reference Laboratories

Most patients who need a transfusion have a sample drawn, pre-transfusion testing done and receive the transfusion with no problem. There are times, usually less than 1% of the time, when a patient's antibody screen is positive and a serology evaluation is needed. Depending on whether your hospital patients are chronically transfused, your hospital may have a higher rate. Rarely is getting a positive red cell antibody screen a welcomed addition to the workload, but it sure can spice up your day. In general, there are some things that the hospital blood bank's lab can do that can solve the case or provide a direction for further work and can speed the resolution.

There are cases that have occurred recently in the American Red Cross National Reference Laboratory for Blood Group Serology (NRLGS) that have been "cool" to work on and have provided unique learning opportunities.

The case I want to discuss in this article was a young woman from Hawaii, who visited her sister in the Northeast. She was hiking, fell and broke her leg. A surgical repair was indicated and although not expected to use blood, a type and screen was ordered. Because it was the weekend, surgery was planned for two days later. The sample was drawn in the ER and she was admitted to immobilize the leg. The blood bank tested the sample in Gel with positive results. The sample was tested with the hospital's first gel panel and all cells were strongly positive.

The policy of the hospital was to perform an autocontrol if all cells in the panel are positive. The autocontrol result will differentiate an autoantibody (autocontrol positive) vs. an antibody to a high prevalence antigen (autocontrol negative). The autocontrol was negative. The second gel panel was tested and all cells were strongly positive. The tech had hoped this would be a case involving multiple antibodies that could be differentiated on the second panel, but since all cells were equally reactive except the autocontrol, the tech now knew that the likely conclusion was going to be an antibody to a high prevalence antigen. Since the patient was in house and realizing that evaluations of high prevalence can be quite complex, the patient was re-drawn and a full sample was obtained to send to the IRL. A full transfusion history and previous history of the patient was obtained. The IRL reviewed the work of the hospital and after performing their routine protocol, started with an adsorption with allogeneic cells to determine if there were underlying antibodies. Since the short panel showed 2+ reactivity, three adsorptions were done with those allogeneic adsorbing cells designed to allow rule in or rule out all common clinically significant antibodies. The determination of how many adsorptions to do can vary from lab to lab, but in this IRL, it was one more than the reaction strength. The adsorbed serum contained anti-E. So now it was known that any rare cells tested would need to be negative for E. In the investigation of an antibody to a high prevalence antigen several approaches can be helpful. The sample can be tested in other techniques known to destroy specific antigens, commonly Ficin and DTT. In addition, phenotyping the cells for "common" antigens which can result in high prevalence antigen negativity may be performed. Usually this testing is done prior to testing rare cells lacking high prevalence antigens because these cells are hard to obtain and are stored in liquid nitrogen at -192°C or glycerol at -70°C. The results of these tests follow.

E negative cells tested with ficin treatment were positive, as well as the same cells treated with DTT. Typings were not performed for k, Kp^b, Js^b as DTT was positive (common KEL System antigens are destroyed by DTT). Cell typings showed S+ s+, Jk(a-b-). Since all common alloantibodies except E had been ruled out using the adsorbed serum, all that was required was to test the rare Jk(a-b-) cells to confirm the antibody was anti-Jk3. This antibody is made by people who are Jk(a-b-). When Jk^a and Jk^b antigens are expressed in the ISBT nomenclature, they are listed as Jk:1 and Jk:2. When a person lacks Jk^a and Jk^b, they are Jk:-1,-2,-3, or simply Jk:-3.

When E- Jk:-3 cells were tested, the result was negative. This blood type occurs rarely, but can be more easily found in Polynesians and Japanese. An inquiry as to the ethnic background of the patient showed she was Polynesian. Experienced serologists may have already guessed that as she was from Hawaii, the ethnic background is often helpful. As the expectation was that it was unlikely that blood would be needed, and as her hemoglobin was 14.0 g/dL, a single autologous unit was drawn in the hospital and made available for surgery date. As a matter of interest, her sister was tested and was also Jk:-3. If it had been a different scenario and multiple units were needed, autologous blood is always the first consideration, but would likely mean a delayed surgery date which may not be possible. Siblings are also more likely (1:4 chance) to be Jk:-3.

So samples from the sister would have been valuable and then, if she was eligible, she would have been drawn. In addition, all American Red Cross and AABB Accredited IRLs are members of the American Rare Donor Program (ARDP) and can be accessed through the ARDP lab at the ARC in Philadelphia. The ARDP is a collaborative program between the AABB and the ARC. If this sample had been submitted to the River Valley ARC in Louisville, they could have searched their frozen inventory to see if there were any units in storage, perhaps from a previous patient who had not used the previously imported blood. If there was no success in looking at regional inventories, then a call could be placed by the ARDP member facility to the ARDP to request E- Jk:-3 units. The ARDP database contains over 35,000 active donors. ARDP staff is available 24/7 to take requests for rare blood from ARDP members' institutions. The ARDP fills or partially fills approximately 92% of all requests. Since there are 8% of referrals where blood cannot be located, it is important for all blood collection facilities to screen for rare donors in their donor base and for hospitals to perform family studies when patients are identified as well as providing large volumes of sera for screening. Some ethnic backgrounds have a higher probability of being negative for certain antigens. A partial listing of "more common" high prevalence antigens and the populations that have an increased probability of finding negatives is listed in Table 1.

Table 1

O _h (Bombay)	Indian, Japanese
U, hr ^b , hr ^s	African American
Js ^b , Cr ^a	African American
En ^a	Finns, Canadians, British, Japanese
Jk:-3	Polynesians, Finns, Japanese
Ge:-3	Mexican, Israeli, Mediterranean

Although in this case, the most notable finding that led to the resolution was the Jk(a-b-) typing result, often the turning point of the case is a finding of a negative reaction with chemically treated cells. Table 2 shows a partial listing of the more common high prevalence antigens and how they are commonly affected by Ficin or dithiothreitol (DTT) treatment.

Table 2

Ficin	DTT	Antigen Specificity
-	+	Ch/Rg, En ^a TS, En ^a FS, Ge:2, Ge:4, Fy:6
+	-	Kn, Sc, Do, GE:3, LW, Common KEL System antigens
-	-	In, JMH, Yt ^a
+	+	Kx, U, Wr ^b , Co, Ok ^a , At ^a , Cs ^a , Emm, Er, Jr ^a , Lan, Vel, Sd ^a

Another tool that can be useful in the investigation of antibodies to high prevalence antigens is that some antigens are present in body fluids and the fluid can be used to neutralize reactivity. These are listed in Table 3.

Table 3 – Soluble Antigens

Sd ^a	Urine (human/guinea pig)
Ch	Serum/plasma
I, i	Human milk

These fluids can be used to neutralize reactivity, thus giving a valuable clue about the specificity of the antibody. In addition, if an antibody is suspected within the Knops (KN) System, frequently, non-reactivity with DTT-treated and KN null [Mc^C(a-), Kn(a-), Yk(a-)] cells are the hallmarks of these antibodies.

Antibodies to antigens of high prevalence are not always clinically significant. Some specificities are known to not be of clinical significance (Ch/Rg/KN) while others have been reported to have variable clinical significance (Lan, Lu^b, Ge2, Ge3, Yt^a). In these cases, it is valuable to have the Monocyte Monolayer Assay performed to predict the clinical significance of the antibody. If the assay result is 0-3% in NRLBGS (5% in Southern California ARC IRL) then the recommendation is to give random, untyped units, and if positive, antigen negative blood must be given. It is a useful adjunct to use if rare blood is not immediately available, or difficult to locate.

Although the presence of a positive DAT is the hallmark of autoantibodies, some other things to keep in mind about antibodies to high prevalence antigens is that seldom, but sometimes, the DAT is negative, yet the specificity is auto in nature. The reason for this appears to be that the auto antigen weakens, sometimes to the point of being non-detectable and the antibody appears to be an alloantibody as the autocontrol and DAT are negative. A list of those antigens reported to be autoantibodies (by testing the recovery serum with acute phase red cells) is in Table 4.

**Table 4 -- Autoantibodies reported with Antigen weakening
Antibody Specificity**

LW	JMH	Kp ^b
Sc1	Rh	Vel
Sc3	U	Jk ^a
AnWj	Co3	Jk ^b
En ^a	Ge3	

Some autoantibodies have clear cut antibody specificity and the DAT is positive. In some cases, the antibody is only positive with antigen positive cells; in other cases it is a "relative" specificity in that stronger reactivity is seen with Ag positive cells, but all cells are reactive. And, in some cases, only adsorptions show the specificity in the adsorbed serum. That is, the sample has the same reactivity with all cells and when the sample is adsorbed with allogeneic cells, an antibody specificity is seen. A list of specificities that have been reported are listed in Table 5.

**TABLE 5—Auto antibodies reported with specificity
Antibody Specificity**

Rh (e, E, D)	U	Di ^b	Kp ^b	Xg ^a
JMH	N	Fy ^b	Js ^b	
Vel	Ge2	Jk ^a	LW ^a	
AnWj	Ge3	Jk ^b	LW ^{ab}	
En ^a	Wr ^b	Jk3	Sc1	

I was pleased to be asked to write this short review of how I see evaluations involving antibodies to high prevalence antigens. I included a few related items of interest for your review. These antibodies can elude even the best tech, but these are the puzzles that are really fun!

2006 Spring Meeting

Our Annual Meeting will be held Tuesday, March 7th and Wednesday, March 8th at The Crowne Plaza – The Campbell House in Lexington KY. Our meeting will be held jointly with the Kentucky Society for Clinical Laboratory Sciences. Visit our website www.kabb.org for a meeting brochure, online registration and an updated list of exhibitors. The following is a list of Exhibitors and Sponsors for the KABB/KSCLS Meeting as of printing (please visit our website for an updated Exhibitor List).

KABB : Helmer, HemoCue, Inc., ImmucorGamma, Jewish Hospital and St. Mary's Healthcare, Kentucky Organ Donor Affiliates (KODA), Olympus, Ortho-Clinical Diagnostics, Next Control Systems, Terumo Medical Corporation, Digi-Trax Corporation. **KSCLS**: Antek HealthWare-LabDAQ, B and B Microscopes, Bayer Diagnostics, Becton Dickinson, Genzyme, Orchard, InfoLab, and Quidel. Sponsors include Terumo, ImmucorGamma and Abbott Diagnostics.

MARK YOUR CALENDARS AND MAKE PLANS TO ATTEND!!!

Case Study: CONTINUED

Written by: Karla Smith, MT(ASCP)SBB, Reference Laboratory Technologist, Central Kentucky Blood Center, Lexington, KY.

Acknowledgements: This case was provided by St. Claire Regional Medical Center, Morehead, KY.

Answers:

1. An antibody to a high incidence antigen is defined as an antibody to an antigen that occurs in greater than 98% of the population.
2. When we see a patient's serum that reacts the same strength with all panel cells tested and not their own cells, we can suspect the patient has an antibody to a high incidence antigen. This reactivity could have been caused by any of several antibodies to high incidence antigens. Anti-PP1P^k and Anti-Vel are examples of two such antibodies that have been noted to cause hemolysis with Ficin treated cells. However, we must keep in mind that there is also the possibility that the reactivity is due to multiple alloantibodies demonstrating the same strength.
3. Yes, by performing a phenotype, we now know which common alloantibodies she has the ability to form. This phenotype can also aid in ruling out certain antibodies to high incidence antigens. An example of this would be for a patient to make an allo Anti-Fy3; the patient would need to type negative for both Fya and Fyb. The same is true for an Anti-Jk3 or Anti-U; the patient would need to type negative for both Jka and Jkb or S and s respectively.
4. Since the patient's autocontrol and DAT are negative and the patient types negative for the Vel antigen, we can say this is an alloantibody.
5. Alloantibodies can be naturally occurring, formed by receiving blood products or pregnancy. Anti-Vel tends to be made by individuals who have been transfused or pregnant. Looking at the patient's history, we see this antibody was most likely formed from her 3 pregnancies.
6. The hospital blood bank contacted their Pathologist. Since the antibody identification had been performed at the area blood center, the blood center Medical Director was contacted by the Reference Laboratory Staff concerning this rare antibody patient and her possible transfusion needs. The Pathologist and blood center Medical Director discussed the laboratory findings and the best course of action for this patient.

Finding blood for a patient with an antibody to a high incidence antigen can be difficult and time consuming. If the local blood center does not have a donor previously identified as antigen negative and a supply of this rare blood, a national search may be the only option.

Fortunately, the Blood Center had a very limited supply of frozen Vel negative donor red blood cells. Since these frozen units are so rare, it was decided that the patient would be closely monitored during surgery. The day of surgery the patient's H&H was 11.9g/dl and 32.7%.

There was blood loss during surgery; however the patient remained stable.

On the second post-op day the H&H dropped to 7.7g/dl hemoglobin and a 23.0% hematocrit. Two units of blood were ordered for transfusion. The morning after receiving the 2 units of blood, the patient's hemoglobin was 9.8g/dl and hematocrit was 28.3%. The patient's lab results remained stable during the course of the hospitalization. Upon discharge the patient's H&H were 11.6g/dl and 33.4%.

- References: 1. Issitt PD, Anstee DJ. Applied blood group serology. 4th ed. 1998:801-803
2. Reid ME, Lomas-Francis, C. Blood Group Antigen Facts Book. 2nd ed. 2004:503-504



ANNUAL MEETING
& TXPO 2006
Miami Beach, Florida ■ October 21-24



AABB Annual Meeting and TXPO 2006
October 21 – 24, 2006
Miami Beach Convention Center
Miami Beach, Florida, USA

Attend this year's Annual Meeting

This year AABB is planning yet another educational event that is sure to fill you with a renewed sense of enthusiasm for your career and the profession of blood banking and transfusion medicine. As in years past, the AABB Annual Meeting and TXPO 2006 is jammed with excellent education sessions, unique networking venues and an exhibit hall crowded with the latest products and services. Read on to discover what AABB has planned for this year's event. For more information please visit www.aabb.org

HIGH FREQUENCY ANTIGEN WORD SEARCH

BY SHARON NOBLE

F T T L R N N M X L Q X T X Y T O
F B G R T N G R L X K B N N N D N
N J O H N M I L T O N H A G E N A
M L R L L W L P Q L S J N T K M L
P R T P R E M O R C G R H A B R L
L Z K L E L L M F J G G E U T R E
J A L N Y L K C L F I K S G W X C
D P N M J K L R V R R A P U D W Y
D I K G B N O E W R N R O S Z O R
N L S P E I R T T T Z G N T C S R
Y S F M N R R B O I E J K C L O V
R C L U Y A E N M R E B M J W L C
M I J R C V K I B R B R R T K C H
K A L K T D V I S M V E L R K U T
F N G P Q B C K K V N K C G G D D
R N N G X H F N L U T H E R A N R
H A K L M Z K T T H P A R M M P M

FIND THE **WORDS** (not symbols/
abbreviations) BELOW:

ANTON (AnWj)
AUGUST (At^a)
CARTWRIGHT (Yt^a)
CELLANO (k)
CROMER (Cr)
DUCLOS
GERBICH (Ge)
JOHN MILTON HAGEN (JMH)
JUNIOR (Jr^a)
KNOPS (Kn)
LANGEREIS (Lan)
LUTHERAN (Lu^b)
McCOY (McC)
PELLETIER (PEL)
RAPH (MER2)
RODGERS (Rg)
SCIANNA (Sc)
SID (Sd^a)
VEL (Vel)

Channels-KABB
c/o Danny Thacker
520 East Chestnut Street
Louisville, KY 40202

www.KABB.org