



Minnesota
Association
of Blood Banks

The Minnesota Bleeder

Spring 2009

What is in this issue?

Investigation of a Weak Subgroup of A
-page 2

16 Year Old Blood Donors in Minnesota
-page 3

Your 2009 MnABB Board Members
-page 4

Babesia Microti
-page 4

An Unusual Case...
-page 5

Membership Renewal
-page 7

PRESIDENT'S CORNER

This year, we will continue to build on the success that we enjoyed through Angela Engblom's leadership. We will specifically focus on:

- Developing a well-attended annual meeting
- Increasing membership
- Networking with other specialty associations

We will complete this work while focusing on education, promoting the field of blood banking, and our Mission:

In order that we may encourage, promote, and render a high standard of service to our communities, our hospitals and those persons who need or will need blood and its components and to foster cooperation between agencies and individuals interested in blood banking, we have formed this association and adopted this constitution for the uses and purposes herein set forth.

I would like to thank all of those who continue to support MnABB through membership and board service.

I look forward to servicing all of you in the upcoming year.

Sincerely,

INVESTIGATION OF A WEAK SUBGROUP OF A

A 31 y/o female patient's doctor requested blood typing to determine if the patient was a subgroup or a chimera. Upon initial testing by our lab, the patient appeared to be group A with mixed-field reactivity in the front type. (Figure 1)

Patient History:

No transplants – bone marrow or organ
Not a twin
No pregnancies
No transfusions of group O blood
Received 11 units A pos blood in 2007-08

The patient had isohemagglutinin titers performed in 2005 on two different samples. The results showed a mixture of group A and group O cells, the majority being group A. It was also noted that anti-A was not apparent in the sample. No further testing was performed at that time.

Due to the strength of reactivity and the patient history, a subgroup appeared a more likely option than a chimera. The next step was to determine what subgroup. The choices were narrowed down to A3 and Amos. The subgroup A3 does not appear to be a mosaic of groups A and O. The sera may contain

anti-A1. The unagglutinated cells can elute anti-A. The subgroup Amos appears to be two separate population of cells: A2 and O. The sera does not contain Anti-A and the unagglutinated cells do not adsorb or elute anti-A.

To determine if the cells exhibiting mixed-field reactivity had single or dual specificity, sequential agglutination was performed. This is a technique involving the addition of anti-sera to red blood cells to agglutinate the prominent cell population, leaving the minority population behind. Sequential agglutination on this patient's sample resulted in two distinct cell populations with approximately 15% of the cells remaining unagglutinated.

The unagglutinated cells were adsorbed with a 1:1 anti-A:saline mixture at 4°C for 30 minutes followed by heat elution at 56°C for 10 minutes using 6% albumin. The resulting eluate and last wash were non-reactive. A positive control was tested in parallel. The minority cell population in this patient's sample did not adsorb and elute anti-A.

The test results point to this patient being an Amos. Genomic typing of the

Figure 1

	Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 cells	A2 cells	B cells
Patient	4+ mf	0	4+ mf	0	0	0	4+

-continued on page 3

-continued from page 2

patient's red cells would provide definitive results. A group in Sweden was contacted regarding both DNA and ABO flow cytometry. Additional sample was not available and these tests have not been performed at this time. It was recommended the patient receive group O blood.

- Becky Anderson, MT(ASCP)



Reference for Investigation of a Weak Subgroup of A:

Daniel, G. Human Blood Groups, 2nd Ed. Oxford: Blackwell Science, 2002.
Mallory, D Immunohematology Methods and Procedures, 1st Ed. Rockville, MD: The American National Red Cross, 1993.

16 Year Old Blood Donors in Minnesota

In Minnesota the minimum age limit to donate blood was lowered from seventeen years of age to sixteen years of age. This law became effective July 1st, 2008.

A student from Blooming Prairie Minnesota brought the blood donation age requirement issue to the MN State Capitol after trying to donate blood in his grandfather's memory. The student was unable to donate as the state law restricted anyone from donating under the age of seventeen, even with parental consent.

Minnesota was the 23rd state to allow sixteen year olds to donate blood, by passing legislation or adopting variances. Several additional states have since passed laws allowing sixteen year olds to donate blood.

Sixteen year old donors have allowed Minnesota blood centers to attract new donors. Local blood centers are trying to increase donors from younger generations in order to

supplement an aging donor population. With the blood supply needs increasing 6% annually, the additional pool of donors will help blood centers and hospitals meet this need.

“A student from Blooming Prairie Minnesota brought the blood donation age requirement issue to the MN State Capitol...”

Sixteen year old donors are required to have written permission from their parent or guardian and may not receive any compensation for donating blood. Sixteen year old donors are also required to meet all of the eligibility requirements as other donors.

Allowing sixteen year olds to donate blood helps blood centers meet the growing demand for blood components. Many blood centers host blood drives at High Schools in the communities they service, which is a great way to encourage 16 year olds to start donating blood.

-Angela Engblom, Past President

Meet your Minnesota Association of Blood Banks Board for 2009

Becki Blake, President

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Babesia Microti

While recent focus of the blood industry has been on potential contamination by newly recognized infectious diseases (e.g. recent testing for Chagas) in blood, a well-established pathogen may be posing an increasing problem for the blood supply - especially in regions like Minnesota. Babesia, a disease caused by the parasite *Babesia microti*, is probably less familiar to Minnesotans than Lyme disease or ehrlichiosis (anaplasma), but it is spread by the same deer tick. The parasites infect red blood cells and cause hemolysis as well as fever, myalgia, headache, and severe fatigue. It sometimes has been compared to malaria by those who have experienced it.

Babesia has been known to cause human disease in the U.S. since the 1950's, but most cases have been in the northeastern states, especially Connecticut. However, *B. microti* agents are responsible for a growing number of human babesia infections. This has been particularly evident in Minnesota in recent years as reported by the Minnesota Department of Health. And, based on our experience this past year at the American Red Cross North Central Blood Services Region based in St. Paul, there appears to be a parallel rise in transfusion-transmitted infections of *Babesia* organisms, attributable almost exclusively to *B. microti*. In the year 2008, reports of transfusion-transmitted infection in Minnesota

-Continued on page 5

-Continued from page 4

spiked. At the Red Cross, we investigated seven cases in which blood recipients had contracted babesia, and our results suggest that five of these donors likely gave contaminated blood. Although donors are asked about babesia, healthy individuals usually can clear the infection without medical treatment, and often they do not have any symptoms. They can also carry the parasite for long periods as described in a report from Minnesota, and potentially give more than one affected donation since they are unaware of infection. This was reported in Minnesota several years ago (Herwaldt et al in *Transfusion*, 2002). Symptoms occur most frequently in elderly, asplenic, or immuno-compromised individuals - conditions that may characterize blood recipients.

It is not clear if the number of cases has spiked because of increased awareness by clinicians or because of a greater level of infestation among deer ticks. However, the Minnesota Department of Health does not anticipate a decline in the presence of babesia here.

Options for preventing transmission by blood transfusion remain limited as there are no current screening tests that are routinely available for blood donors.

-Gary Bachowski, M.D.



An Unusual Case of Warm Autoimmune Hemolytic Anemia in an Infant

Warm autoimmune hemolytic anemia (WAIHA) is most common in adults who typically present with anemia, reticulocytosis, a positive antibody screen, and a positive DAT. A panel typically shows an antibody with pan-specificity or broad specificity with variable reactivity with certain antigens, with a similar pattern seen in the eluate. Most patients will respond to immunosuppressive steroid medications such as prednisone. We recently saw a case of WAIHA that challenged this stereotypic clinical scenario.

A three-month-old female presented to the hospital with a one-month history of intermittent jaundice associated with episodes of vomiting, and hemoglobin of 2.6 g/dL. Hemolysis labs showed evidence of ongoing hemolysis (elevated bilirubin and lactate dehydrogenase, extremely low level of haptoglobin). Her blood type was O positive, anti-D was identified in her serum, a DAT was positive for IgG only, and an eluate showed only anti-D. Antibody tests for parvovirus and HIV were negative, but CMV was isolated from her urine. The mother's pregnancy and delivery were uneventful, her blood type was O positive, and her antibody screen was negative.

The patient received multiple O negative red cell transfusions. She was started on steroids and, because of the acuity of her disease, was also treated with intravenous immunoglobulin.

-Continued on Page 6

-Continued from page 5

She did not improve, so at age five months her care was transferred to a tertiary care center. There she was clinically well other than jaundice and anemia. Laboratory work-up showed hemoglobin 6.2 g/dL, blood type O negative (D-positive cells were NOT identified), negative DAT, and anti-D in the serum. Total bilirubin was elevated, and her reticulocyte count (0.1%) was extremely low given the degree of ongoing anemia. Steroid therapy was continued with no apparent response.

She remained hyperbilirubinemic and transfusion-dependent with every-other week transfusions needed to maintain her hemoglobin above 5 g/dL. She was worked-up for a possible red cell production defect with a bone marrow biopsy. The biopsy showed that her bone marrow had plenty of red blood cell precursors, but the morphology was somewhat abnormal suggesting that new red blood cells were not being effectively produced for circulation (ineffective erythropoiesis).

“The patient received multiple o-red cell transfusions...also treated with intravenous immunoglobulin.”

At age 10 months, her DAT became positive for IgG with anti-D in the eluate, she started typing as mixed field for D despite having received only O negative red cells, and her reticulocyte count increased to 12%. Her hemoglobin stabilized and she no longer required transfusion. By age 13 months, her DAT was negative, she was typing as O positive without mixed field for D, her bilirubin was normal, and her hemoglobin was 9.5 g/dL. At age 14 months, her hemoglobin was 11.4 g/dL.

She no longer requires care for WAIHA.

This case further demonstrates that infants can develop extremely potent autoantibodies despite their immature immune systems. Infants can even develop Evan’s syndrome which consists of autoimmune hemolytic anemia and autoimmune thrombocytopenia. This case also demonstrates that autoantibodies can have specificity tailored to a single antigen (in this case, anti-D). The case also suggests that a red cell autoantibody can possibly damage red blood cell precursors as they mature in the bone marrow or just as they are released into circulation causing the patient’s blood type to change to essentially that of transfused cells. The fact that the patient had CMV in her urine is of interest, but the role CMV infection may have played in her WAIHA is unclear

-Robert C. Skeate, MD MS

-Elizabeth H. Perry, MD

-Ashish R. Kumar, MD PhD

Visit our website mnabb.org

By visiting our website, you will find a variety of useful tools. For example:

- Education material including informative presentations
- **NEW!** Pictures of the 2008 Fall meeting
- Board meeting minutes
- Job Postings
- Links to resources, and
- Much, much more!

**Thanks to all members, participants,
and speakers for making the 2008
Minnesota Association of Blood Banks
Annual Meeting a success.**



If you have any ideas or comments about the Minnesota Bleeder send them to:
newsletter@mnabb.org

Membership Dues

Membership Dues:
Individual -- \$10
Institutional -- \$50

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