

The Microenvironment

November 2013



THE CANADIAN
HEMATOLOGY
SOCIETY

SOCIÉTÉ
CANADIENNE
D'HÉMATOLOGIE

C H S C H

NEWSLETTER

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2013 CHS Executive Committee

President	Dr. Stephen Couban
Past-President & Editor, The Microenvironment	Dr. Tom Nevill
Vice-President	Dr. Aaron Schimmer
Secretary Treasurer	Dr. Molly Warner
Executive Vice-President	Dr. Gail Rock

199—435 St. Laurent Blvd.
Ottawa, ON K1K 2Z8 CANADA
1-613-748-9613

Please join us...



New Orleans, 2013

The Canadian
Hematology Society

Annual Reception
Awards Presentations
And Dinner at ASH

Sunday, Dec. 8, 2013
at the W Hotel
333 Poydras Avenue
New Orleans

*only 3 blocks from the Congress Centre,
near the famous French Quarter.
Hope to see you there!*

Email RSVP by Nov. 22, to chsatah2013@gmail.com

MESSAGE FROM THE PRESIDENT

Enthusiasm for upcoming activities

Dear Colleagues,

This will be my
last President's
Message.

In December,
2013 at the CHS
Meeting at ASH
in New Orleans,
I will be handing
over the President's gavel to Aaron
Schimmer who is going to very ably
lead the Canadian Hematology Society.



Dr. Stephen Couban

that I would like to describe to you.

For a number of years, we have not had
a Canadian hematology meeting. Many
of us attend meetings and symposia
focused in specific areas of hematology
but we have not had a general
hematology meeting in Canada for
some years.

Next year, from June 12-14, 2014, the
Canadian Blood and Marrow
Transplant Group will be holding its
annual meeting in Halifax. At that
time, the Canadian Apheresis Group
will also be meeting in Halifax. On

We have had an active year and there
are developments on a number of fronts

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Friday June 13, 2014, from 9am to 12 noon, there will be a special combined CHS and CBMTG session. Dr **Neil Young** from the NIH will speak about the diagnosis and treatment of aplastic anemia. There will then be a plenary presentation from Drs **Sudeep Shivakumar** and **Marc Carrier** about thrombotic considerations in patients with hematologic malignancies. Finally, we will have special presentations by one or more of the **CHS Research Abstract Award** and **R.K. Smiley Award winners**. All these presentations should make for an educational and enlightening morning.

Canadian meeting momentum

In addition, a number of Canadian hematology groups including Vector (the Canadian thrombosis research interest group), the Canadian Apheresis Group, Thrombosis Canada, Myeloma Canada, the Canadian Myeloproliferative Group, the Canadian Blood and Marrow Transplant Group, the Canadian Society of Transfusion Medicine, the Canadian National Transplant Research Program and the Canadian Hemoglobinopathy Group participated in a conference call recently and many of these groups are hoping to come together in Halifax as well. More on this to follow but I think there is interest and enthusiasm in getting a Canadian hematology meeting going again!

Accreditation Interest

After our Annual Meeting at ASH last year, we surveyed CHS members and there was overwhelming interest in getting Royal College accreditation of the ASH SAP. This process is now underway and I hope to announce shortly that we have been successful.

Over the course of the last one to two years, we have tried to increase communication between the Royal College Hematology Specialty Committee and the CHS. Dr **Darrell White** who chairs the Hematology Specialty Committee has been very supportive of this. The immediate past-president of the CHS is now a member of the Specialty Committee.

The issue of appropriate manpower levels is coming up in a number of areas of medicine and, sooner rather than later, I think we will all need to have a better sense of needs in this respect in the field of hematology: how many hematologists are there, how many do we need, how many are about to retire and how many are in training? It is striking how little national information exists in this area.

Industry relationships

We also need to continue to review, nurture and renew our collaborative relationships with colleagues in industry. I believe our organization simply cannot survive and flourish without a productive and healthy relationship with our colleagues in industry. Their support is the reason that we can support important initiatives such as the CHS Awards at ASH for trainees and junior faculty, as well as the R.K. Smiley Awards and the Microenvironment. A sincere thanks to all our industry sponsors for your vote of confidence in our organization.

Finally, I look forward to seeing many of you at the CHS reception at ASH in New Orleans on Sunday December 8, 2013. You will find more information about that meeting elsewhere in these pages.

Sincerely,
Stephen Couban

NEW 2014 EXECUTIVE BOARD



The time has come around again when the CHS membership is asked to consider nominations to the Executive Committee.

In accordance with the CHS Bylaws, a three-member Nominating Committee, Chaired by the Immediate Past-President has been organized to prepare a slate of nominees.

The nomination committee has put forth the name of **Lynn Savoie**, for the only open position this year, that of **Vice-President**.

Further nominations may be submitted in writing to the Secretary-Treasurer, if signed by five active members and accompanied by the written consent of the nominees.

Any nominations should be sent to:
Canadian Hematology Society
199-435 St. Laurent Blvd.
Ottawa, ON K1K 2Z8

Tel: 1-613-748-9613
Fax: 1-613-748-6392

canadianhematology@uniserve.com

Message du Président

De l'enthousiasme pour les activités prochaines

Chers Collègues,

Ceci sera mon dernier Message du Président. En décembre 2013, à la soirée de la Société canadienne d'hématologie (SCH), organisée au siège de la Société américaine d'hématologie (SAH), à la Nouvelle Orléans, je vais transférer mon rôle comme Président à Aaron Schimmer qui sera bien en mesure de mener la SCH.

Nous avons eu une année active et il y a des développements sur plusieurs sujets auxquels j'aimerais vous décrire.

Pour quelques années, nous n'avons pas eu de réunions canadiennes d'hématologie. Plusieurs d'entre nous assistent à des réunions et symposiums qui concentrent sur les régions spécifiques de l'hématologie mais nous n'avons pas eu une assemblée générale d'hématologie au Canada pour quelques années.

L'année prochaine, du 12 au 14 juin, 2014, le Groupe canadien de transplantation de moelle et de sang va tenir leur réunion annuelle à Halifax. Pendant ce temps, le Groupe canadien d'aphérèse sera aussi à Halifax pour leur réunion annuelle. Vendredi le 13 juin, 2014, de 9h00 à midi, il va y avoir une session spéciale combinée de la SCH et du Groupe canadien de transplantation de moelle et de sang.

Dr. Neal Young, de l'Institut national de la santé parlera à propos du diagnostic et de la gestion des patients atteints d'anémie aplasique. Il y aura aussi une présentation plénière par Dr Sudeep Shivakumar et Dr Marc Carrier à propos des considérations thrombotiques chez les patients atteints de malignité. Finalement, nous allons avoir une présentation spéciale par un/une ou plus d'un/une gagnant(es) du prix de la SCH à la SAH et gagnant(es) du Prix RK Smiley. Toutes ces

présentations devraient faire pour un matin éducatif et éclairant.

L'élan de la réunion canadienne

De plus, un certain nombre de groupes canadiens d'hématologie, y compris Vector (le Groupe de travail sur la thrombose du Canada), le Groupe canadien d'aphérèse, Thrombose Canada, Myélome Canada, le Groupe canadien d'intérêt en syndromes myéloprolifératifs, le Groupe canadien de transplantation de moelle et de sang, la Société canadienne de médecine transfusionnelle, le Programme national de recherche en transplantation du Canada, le Groupe canadien d'hémoglobinoïde ont récemment participé à un appel téléconférence, et plusieurs de ces groupes espèrent aussi se rencontrer à Halifax.

À y suivre, mais je crois qu'il y a un intérêt et de l'enthousiasme pour encore une fois recommencer la réunion canadienne d'hématologie!

Intérêt sur l'accréditation

Suite à notre Réunion Annuelle à la SAH l'année dernière, nous avons enquêté les membres de la SCH et il y avait un intérêt énorme pour obtenir l'accréditation du Collège royal pour la SAH SAP. Ce processus est en démarche et j'espère pouvoir annoncer bientôt que nous y avons réussi.

Au cours des dernières un ou deux années, nous avons essayé d'augmenter notre communication avec le Comité spécialiste d'hématologie du collège royal et la SCH. Dr Darrell White, qui préside le Comité spécialiste d'hématologie, soutient bien cet objectif. L'ancien président de la SCH est maintenant un membre du Comité spécialiste.

La question du niveau de main-d'œuvre approprié se démontre dans quelques

régions de médecine et, tôt ou tard, je crois que nous allons tous avoir besoin d'un meilleur sens des besoins dans le domaine d'hématologie : il y a combien d'hématologistes? combien est-ce qu'on en a de besoin? combien sont en vue de la retraite? combien sont en formation? C'est surprenant combien peu d'information nationale existe à ce sujet.

Relations industrielles

Nous avons aussi besoin de continuer de réviser, former et renouveler nos relations collaboratives avec les collègues dans l'industrie. Je crois que notre organisation ne peut pas survivre et prospérer sans une relation productive et saine avec nos collègues dans l'industrie.

Leur support est la raison que nous pouvons supporter les initiatives importantes telles que les Prix de la SCH à la SAH pour les apprentis et jeunes facultés, ainsi que les Prix RK Smiley et le Microenvironnement. Un merci sincère à tous les commanditaires d'industrie pour votre confiance en notre organisation.

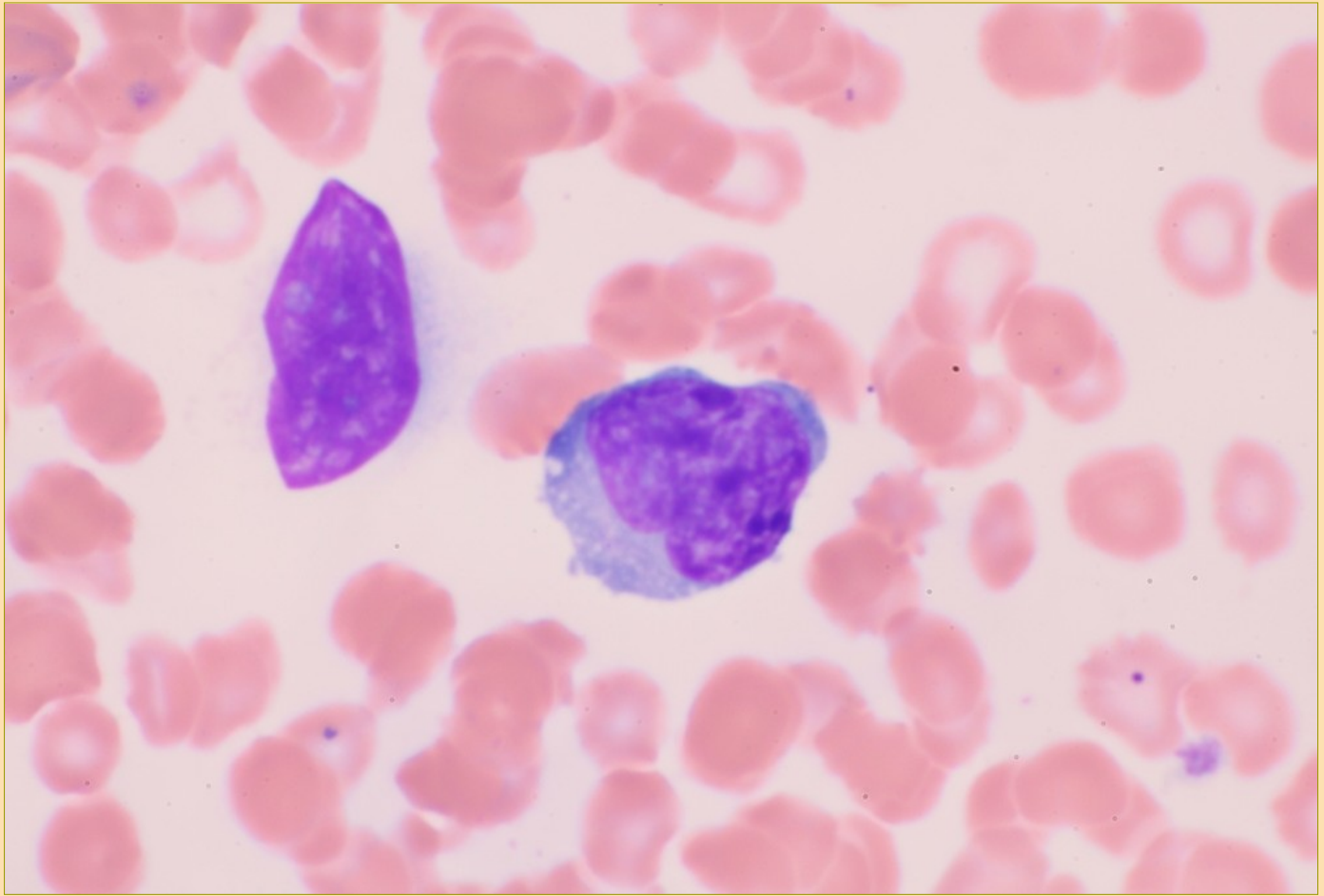
Finalement, j'ai hâte de vous voir à la réception de la SCH à la SAH à la Nouvelle Orléans dimanche, le 8 décembre, 2013.

Vous trouverez plus d'information sur cette réception à d'autres endroits dans ces pages.



Cordialement,
Stephen Couban

Do you know the diagnosis?



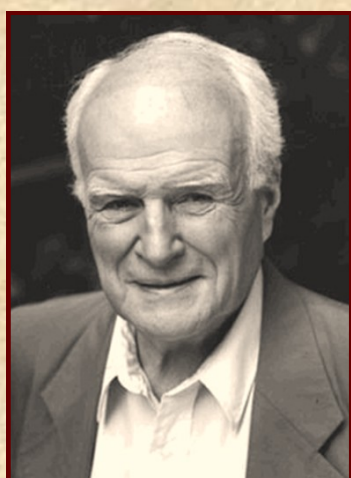
A fifty year-old Aboriginal man from Vancouver Island presented with a two-month history of fatigue, vomiting and weight loss and was found to have bilateral axillary lymphadenopathy.

- CBC revealed a hemoglobin of 113 g/L, a WBC of $24.1 \times 10^9/\text{L}$ and a platelet count of $318 \times 10^9/\text{L}$.
- Serum creatinine was 158 $\mu\text{mol/L}$, calcium 3.88 mmol/L , albumin 20 g/L and LDH 1211 U/L (upper normal of 220).
- Diagnostic imaging revealed lytic lesions in the T6, T7, T9 and T12 vertebrae.
- Past medical history was significant for a neurological disorder of uncertain nature for which he had been followed by a specialist for the previous eight years.
- Family history revealed that several family members in multiple generations had died of malignancies although details were not available.
- The peripheral blood film is shown above.
- *Do you know the diagnosis?*

What is the diagnosis? ... SEE PAGE 14

HISTORY CORNER: Dr. J. Fraser Mustard

Medical pioneer and world leader in early childhood development



**Dr. J. Fraser Mustard
(1927-2011)**

James Fraser Mustard was born and raised in Toronto and received his MD from the University of Toronto in 1953.

He went on to obtain his PhD at the University of Cambridge in England and then returned to Toronto as a senior intern at Sunnybrook Hospital. He became a research associate with the Department of Veterans Affairs and a fellow in the Department of Medicine at the University of Toronto.

His research in the 1950s focused on isolation of platelets from whole blood and factors that could affect their function. He became a research associate with the National Heart Foundation of Canada in 1960 and despite the fact that he published over 250 journal articles on platelet function and thrombosis over the next twenty-five years, the

article written about him for the *Toronto Star* at the time of his death in 2011 summarized this work in a single sentence.

Platelet function research

Dr. Mustard had a variety of interests during his medical career that spanned six decades. His hematologic contributions began with his work on platelet function at Sunnybrook Hospital. He decided to study platelet survival in patients with gout who were being seen in the Metabolic Unit at Sunnybrook.

One of his first observations was that gout patients who were receiving an anti-inflammatory agent, Sulfipyrazone, exhibited longer platelet survival.

This led to a pharmaceutical company-sponsored trip to Switzerland and great interest in his subsequent finding that ASA inhibited platelet aggregation. This property of ASA had inadvertently been observed in 1950 by Dr. Lawrence Craven, a GP from California, who had routinely given ASA-laced gum to patients prior to tonsillectomy only to have them experience excessive post-operative bleeding.

Dr. Mustard's more scientific discovery was also being simultaneously described by others, including Dr. Armand Quick and medical researcher Harvey J. Weiss.

With the suspected role of thrombosis in atherosclerotic heart disease becoming apparent, the anti-platelet effect of ASA led to a clinical trial being launched by Peter Ellwood in February 1971 that suggested a modest reduction in the incidence of myocardial infarctions. Many further studies were done and strongly supported this finding.

Published extensively

Dr. Mustard published extensively in the field of platelet function with influential articles in the *Canadian Medical Association Journal (CMAJ)* in 1961 ("Platelets, thrombosis and vascular disease"), *Nature* in 1963 ("Effects of intravenous phospholipid containing phosphatidyl serine on blood clotting"), *Blood* in 1967 ("The effect of sulfipyrazone on platelet economy and thrombus formation in rabbits") and the *British Journal of Haematology* ("ADP-induced platelet aggregation in washed rabbit platelets") and *Circulation* ("Thromboembolism: a manifestation of the response of blood to injury") in 1970.

However, amongst his articles on platelet function and dysfunction were editorials focusing on key issues relating to support for medical research ("Medical education and research: the foundations of quality health care", *CMAJ*, April 9, 1966).

Continued on page 6

HISTORY CORNER: Dr. J. Fraser Mustard

McMaster Medical School

He became a driving force behind the creation of a new medical school at McMaster University in 1966 and was its first chairman of the Department of Pathology.

Establishment of CIFAR

It was Dr. Mustard's commitment to research that led to his involvement in the establishment of **The**



Canadian Institute for Advanced Research (CIFAR) and he was its founding president in 1982, a position he maintained for 14 years.



However, it was his interest in education that led to his involvement in early childhood learning.

In the late 1990s, Dr. Mustard was asked by the Ontario Government to co-chair a report with **Margaret McCain** on early childhood learning. This report "*The Early Years Study – Reversing the Real Brain Drain*" was released in April 1999 and emphasized the importance of promoting early

childhood education to people of all income levels and encouraging parental and business involvement.

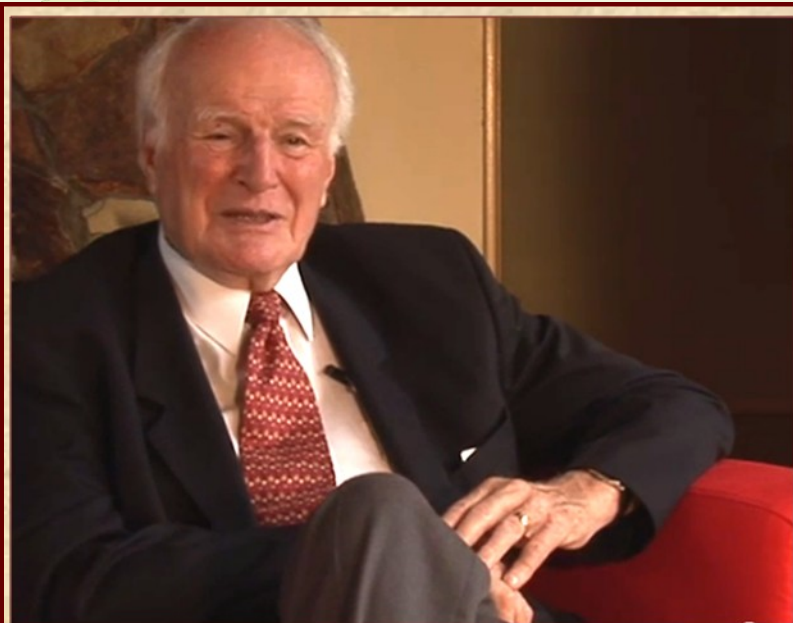
A second report followed in 2007 and a third, which suggested children as young as two years should start receiving community-based, voluntary formal education, was released November 22, 2011, six days after his death.

In recognition of his work in this area, the University of Toronto created the **Fraser Mustard Institute for Human Development** in September, 2012.

Dr. Mustard had many honors bestowed upon him during his lifetime; he was awarded the **Royal Bank outstanding service to Canada** award in 1993, became an Officer of the Order of Canada in 1985. In 1993 he was promoted to **Companion of the Order of Canada**.



In 2003, he was inducted into the **Canadian Medical Hall of Fame**.



"Canada's tomorrow depends on our ability to leverage what we know into policies and practices that benefit children today. Now, as never before, the knowledge needs to be harnessed to serve not just every individual in our society, but every society around the globe."

Dr. J. Fraser Mustard

Canadian Hematology Society Announces 2014 RK SMILEY RESEARCH GRANT

ABOUT
THE
AWARD

Established in 2011 to mark the Fortieth Anniversary of the Canadian Hematology Society's service and to support hematology practitioners in Canada, this award is named in honour of the CHS Founding President, Dr. R. Kennedy Smiley. Many impressive submissions from across Canada were received in response to the first two rounds of funding following the initial announcement of this new research grant program.

Now for the third consecutive year, the Executive Committee of the Canadian Hematology Society is very pleased to announce that **the next deadline for submissions to the R K Smiley Award is February 14, 2014.**

The R K Smiley Research Grant program will provide start up grants of \$10,000 aimed at pilot projects expected to lead to larger follow-up studies funded by CIHR or other grant funding agencies.

Eligibility Criteria: Applicants may be clinicians or scientists within seven years of completion of training with a project relevant to the field of hematology.

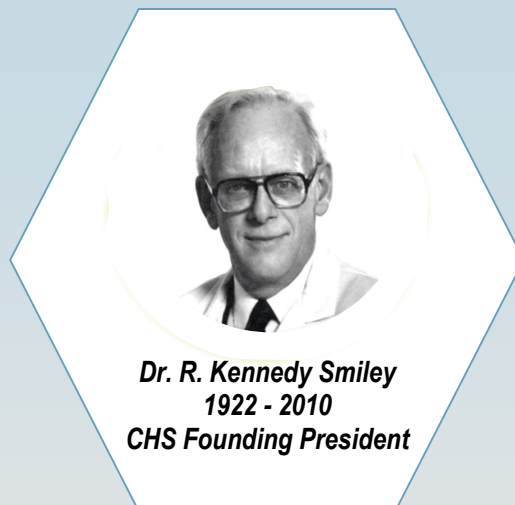
Applications will contain

- Title of project
- Principle investigator & Co-investigators
- Background
- Relevance to hematology
- Research proposal
- Budget

Details

Applications should be:

- maximum one page in length
- double-spaced
- font size 12
- additional page: budget



Dr. R. Kennedy Smiley
1922 - 2010
CHS Founding President

HOW
TO
APPLY

NB - Applications should be emailed to the Canadian Hematology Society at chs@uniserve.com

Application deadline is 1800 hrs EDT, Friday, February 14, 2014

Successful applicants will be notified in April 2014.

CASE 1: Acquired aplastic anemia

Dr. Andrea Kew

A twenty year old woman presented with a two month history of fatigue, dyspnea and easy bruising.

She was found to have a hemoglobin of 58 g/L, a WBC of $2.3 \times 10^9/L$, neutrophil count of $0.15 \times 10^9/L$ and a platelet count of $5 \times 10^9/L$.

Bone marrow examination revealed <5% cellularity with a normal female karyotype.

Flow cytometry did not show any evidence of GPI-deficient blood cells.

She did not have a histocompatible sibling and was treated with Cyclosporine and horse anti-thymocyte globulin but 6 months later had no improvement in blood counts and remained red cell and platelet transfusion-dependent.

Acquired aplastic anemia (AA) is a relatively rare disorder with an estimated incidence of 1-2 patients per million per year.

It is critical to confirm the diagnosis and rule out other causes of marrow aplasia in order to make appropriate management decisions. The traditional definition is

pancytopenia with a hypocellular marrow and no infiltration, fibrosis or dysplasia. Once the diagnosis is confirmed, it is important to define the severity of the disease.

AA is classified as very severe, severe or non-severe.



Dr. Andrea Kew
Hematologist
Queen Elizabeth II Health
Sciences Centre
Halifax, Nova Scotia

For severe AA, there is a requirement of at least two of: reticulocytes $<20 \times 10^9/L$, platelets $<20 \times 10^9/L$ and neutrophil count $<0.5 \times 10^9/L$. For very severe, the criteria are the same except for a neutrophil count of $<0.2 \times 10^9/L$. Non-severe patients do not fit the criteria for severe or very severe.¹

This patient has very severe AA and has been

appropriately treated with first-line immunosuppression as she did not have a histocompatible sibling available. In Canada, we have typically used horse anti-thymocyte globulin (hATG; Atgam®) combined with Cyclosporine.

There were several retrospective trials suggesting that hATG may be superior to rabbit ATG (rATG; Thymoglobulin®). Recently, a prospective, randomized study from the National Institutes of Health (NIH), compared hATG with rATG for the initial treatment of AA.

This study showed both a higher response rate at 6 months and increased survival rate at 3 years in the hATG arm; 68% vs. 37% ($p < 0.001$) and 96% vs. 76% ($p = 0.04$), respectively,² providing compelling evidence to continue to use hATG rather than rATG as first-line immunosuppressive treatment.

This patient had appropriate first-line treatment with no response and thus has resistant disease. There are several treatment options at this point including a second course of immunosuppression with rATG and cyclosporine, consideration of a matched unrelated donor (MUD) bone

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"ASK THE HEMATOLOGIST" - Case 1, continued

marrow transplant (BMT), alternative donor BMT or other medical therapies such as high-dose Cyclophosphamide or Alemtuzumab (MabCampath®).

In patients under 30-40 years old, the standard first-line treatment in AA is consideration of an allogeneic BMT if a fully histocompatible sibling is available, with an expectation of 75-80% chance of long-term survival.³ Traditionally, MUD BMT has been associated with much worse outcomes because of high rates of graft failure, graft-versus-host disease (GVHD) and infectious complications.

A retrospective CIBMTR study evaluating patients who received a MUD BMT for AA between 1988 and 1998 reported only 39% survival at 5 years.⁴

Fortunately, outcomes have improved in this area because of advances in HLA typing and improvements in conditioning regimens.

In a study reported by the European Group for Blood and Marrow Transplantation (EBMT) which included 498 patients transplanted between 1990 and 2005, 5-year survival was 32% before 1998 and 57% after 1998.⁵ Recent studies have

demonstrated survival rates of >75% with Fludarabine-based conditioning.⁶ It is difficult to predict the likelihood of response to a second course of ATG; reported rates vary widely but are likely between 30-60%.³ It is also very difficult to know if a response to second line-treatment would be durable.

Other options, such as high-dose Cyclophosphamide or Alemtuzumab, are generally reserved for patients who do not respond to second-line immunosuppressive treatment or do not have an available donor.

Since this patient is young and presumably otherwise healthy, it would be very reasonable to consider MUD BMT with Fludarabine-based conditioning if a fully-matched donor is available.

If such a donor is not available, a second course of immunosuppression with rATG would be an appropriate option. Transplantation from an alternative donor could be considered, but only in the context of a clinical trial.

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CASE 2: Atypical hemolytic uremic syndrome

Dr. Kimberley Ambler

A twenty-one year old woman presented with fatigue and dyspnea 14 days post-partum.

Of note, her pregnancy was complicated by severe hypertension requiring magnesium sulfate infusion and induction of labour at 39 weeks gestation.

On examination she was very pale and hypertensive (blood pressure 175/110 mmHg).

Laboratory investigations performed prior to delivery showed hemoglobin 138 g/L, platelets 230 giga/L, and creatinine 66 µmol/L.

Investigations at 14 days post-partum showed hemoglobin 53 g/L, platelets 147 giga/L, reticulocytes 197 giga/L, INR 1.0, PTT 25 seconds, creatinine 548 µmol/L, lactate dehydrogenase 1375 U/L (upper normal 240), total bilirubin 21 µmol/L, ALT 35 U/L, AST 52 U/L, alkaline phosphatase 102 U/L, haptoglobin less than 0.08 g/L.

Schistocytes and polychromasia were seen on the peripheral smear. The Apheresis Service was asked to review the patient.

Atypical hemolytic uremic syndrome (aHUS), also called complement-mediated HUS, is a rare disorder characterized by microangiopathic hemolytic anemia, thrombocytopenia, and acute renal impairment. It is caused by dysregulation of the alternate complement pathway due to complement gene mutations or antibodies to complement factor H

(CFH).¹ It is often very difficult to diagnose aHUS and to differentiate it from other causes of microangiopathic hemolytic anemia such as Shiga-toxin producing *Escherichia coli* associated HUS (also called typical HUS),



Dr. Kimberley Ambler
Hematologist
Vancouver General Hospital
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thrombotic thrombocytopenia purpura (TTP), malignant hypertension, septicemia, autoimmune disorders, malignancy, and the HELLP syndrome.

The patient in this case had no precipitating diarrheal illness, malignancy, or autoimmune disorder. The clinical scenario was not consistent with HELLP because she had normal liver enzymes and her status progressively worsened after delivery. ADAMTS13 level was later assessed and was normal at 0.82, making TTP very unlikely. Other features of this case that are more consistent with aHUS than

TTP include the profound renal impairment and marked hypertension with only a minor drop in platelet count.

Approximately 50-60% of patients with aHUS have an identifiable trigger to their presentation.² Pregnancy is the precipitating factor in up to 20% of women with aHUS, with the majority of these women presenting in the postpartum period.³ The absence of other organ involvement is not necessary for the diagnosis of aHUS since extra-renal manifestations are seen in 20% of patients with aHUS, with CNS involvement reported in 10% of patients.²

Testing for mutations in genes encoding the proteins that regulate the alternate complement pathway can be performed to confirm the diagnosis of aHUS. Approximately 25% of patients with aHUS have a mutation in the gene encoding CFH.³ Mutations in the genes for CFI, CFB, C3, THBD, MCP, and CFHR1/3 are reported in 1-8% of patients with aHUS.²

Negative testing does not rule out the diagnosis of aHUS since 30-40 % of patients with a clinical scenario consistent with aHUS have no detectable mutation.² At the present time, genetic testing for mutations associated with aHUS is performed in only one laboratory in Canada.

Plasma therapy, including plasma infusion and plasma exchange is the initial treatment of choice for aHUS and until recently was the only treatment available. Plasma exchange provides removal of mutant complement regulatory proteins and anti-CFH antibodies in

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"ASK THE HEMATOLOGIST" - Case 2, continued

addition to restoration of normal complement proteins. There are no controlled trials of plasma exchange in aHUS.

Retrospective studies suggest up to 70% of patients obtain a hematologic remission with plasma therapy but rates of renal recovery are lower and are dependent on the time between disease onset and initiation of therapy.³

The American Society for Apheresis Guidelines recommend initiation of daily plasma exchange for patients with aHUS at diagnosis, but they acknowledge that there is no standardized regimen for the duration and schedule of plasma exchange.⁴

Our approach for patients with aHUS is to perform daily plasma exchange until hematologic remission is achieved, with normalization of the platelet count and no evidence of hemolysis. The frequency of plasma exchange is then gradually tapered as tolerated, but some patients will require long-term maintenance plasma exchange unless they receive alternative treatments.

Ecuzumab (Soliris®) is a recombinant humanized monoclonal antibody that targets C5 and blocks its cleavage, which prevents formation of the proinflammatory C5a and the membrane attack complex C5b-9. In two Phase 2 clinical trials, 75-90% of aHUS patients treated with Ecuzumab achieved hematologic remission and renal response rates were 15-75%.⁵

Patients treated with Ecuzumab are at increased risk of infection with encapsulated bacteria, particularly *Neisseria meningitidis*, as a result of

terminal complement blockade and should therefore receive meningococcal vaccination before treatment.⁵ Long-term prophylactic antibiotics should also be considered, particularly in patients with severe chronic kidney disease who have lower rates of seroconversion.²

Patients with aHUS have high rates of relapse and poor outcomes after renal transplantation unless they are treated with Ecuzumab and/or plasma exchange at the time of and after transplantation.⁶ Liver or combined liver-kidney transplantation is another treatment option since CFH, CFI, CFB, and C3 are synthesized in the liver.

There are only a small number of cases of combined liver-kidney transplantation for aHUS reported in the literature with mixed results,^{2,7} therefore the potential risks and benefits must be carefully evaluated for the individual patient when considering this treatment option.

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The CHS *meets* In Canada

Friday June 13, 2014

9:00 am to 12 noon

The Westin Nova Scotian Hotel
Halifax, Nova Scotia

PROGRAM

8:45—9:00 am

Welcome

9:00—10:00 am

Dr. Neal Young

*The Diagnosis and
Treatment of Severe
Aplastic Anemia*

10:00—11:00 am

Dr. Sudeep Shivakumar &
Dr. Marc Carrier:

*Thrombosis Challenges
in Patients with
Hematologic
Malignancies*

11:00 am—Noon

Presentations of CHS Awardees
Best of CHS!

June 13, 2014
Halifax, Nova Scotia

in conjunction with the
CBMTG & CAG



Further program details will be announced in
the spring issue of *The Microenvironment*
and on the CHS website.

UPCOMING EVENTS

CHS Annual Reception, Dinner & Awards Evening

Sunday, December 7, 2013

New Orleans

Contact: chs@uniserve.com

ASFA & World Apheresis Association Joint Congress

April 2—5, 2014

San Francisco

Contact: asfa@apheresis.org

Canadian Apheresis Group and Canadian Association of Apheresis Nurses Annual General Meeting and Scientific Sessions

June 13—15, 2014

Halifax, Nova Scotia

Contact: cag@cagcanada.ca

Canadian Blood and Marrow Transplant Group Annual Conference

June 11—14, 2014

Halifax, Nova Scotia

Contact: www.cbmtg.org

International Society of Thrombosis and Haemostasis (ISTH) 25th World Congress

July 11—17, 2015, Toronto, Ontario

The Only Official 2014 Highlights of ASH® in North America

Six locations, three dates, one great program - the only official *Highlights of ASH®* in North America.

2014 Meetings

January 17 - 18; New York & Dallas

January 24 - 25; San Francisco & Atlanta

January 31 - February 1; Miami & Seattle

Contact: <http://www.hematology.org/Meetings/Highlights/>



Reminder - Save the Date

CHS AT ASH

Sunday, December 8, 2013

New Orleans

CHS ANNUAL RECEPTION, DINNER AND AWARDS EVENING

at the W Hotel, 333 Poydras Avenue

*only 3 blocks from the Congress Centre
& steps from the famous French Quarter.*



OPPORTUNITIES

The University Health Network in Toronto, has a job opportunity for a graduating adult hematology resident interested in benign/general hematology.



UHN

Toronto General
Toronto Western
Princess Margaret
Toronto Rehab

Details:

- They are looking for a clinical associate/fellow to provide a hematology consult service in Toronto at UHN.
- This will be a salaried position.
- It will be ideal for someone wanting to gain further general hematology experience, needing to stay in the GTA, or as an alternative to community based practice.
- Interested parties should contact **Erik Yeo, Head of Benign Hematology**, erik.yeo@uhn.ca

**Invitation
to submit ...**

The Microenvironment will be happy to consider for publication, articles submitted by members who have sponsored student summer projects.

Queries should be directed to:

- Dr. Tom Nevill, The Editor, *The Microenvironment*
- Email: chs@uniserve.com

STUDENT RESEARCH ARTICLES



...from Page 4 :

The DIAGNOSIS? Answer:

Differential on the peripheral blood showed 6.2 lymphocytes that on flow cytometry were CD2, CD3, CD4 and CD5-positive with variable expression of CD16 and HLA-DR.

Testing revealed the patient to be HTLV I positive. He was diagnosed with Adult T-cell Leukemia/Lymphoma (ATLL) and when records were obtained from his neurologist, these indicated that he had been diagnosed with a myelopathy that had been indolent in nature.

HTLV I is endemic in Japan, the West Indies, Seychelles Islands and Columbia but is also endemic in Canadian aboriginals of the Northwest Pacific coast (*Can J Neurol Sci.*

1993;20:302-306).

ATLL is one of the consequences of HTLV I infection and can manifest in four ways: “acute”, “lymphomatous”, “smoldering” or “chronic”.

This patient had the acute variant and phase III trials support the superiority of anti-retroviral therapy (Zidovudine plus Alpha-interferon) over combination chemotherapy.

Unfortunately, he did not respond to anti-retroviral drugs, developed refractory hypercalcemia and succumbed with six weeks of presentation.

Fellowships

Thrombosis Fellowship 2012-2013 Jewish General Hospital, McGill University

The JGH Thrombosis Program is currently accepting applications for a one year fellowship (July 1, 2014—June 30, 2015) to acquire and consolidate expertise in Thrombosis. Specific areas of clinical activity include the Thrombosis Clinic, Anticoagulation Clinic and In-patient Thrombosis Consultation Service. Our Thrombosis Program also encompasses a broad range of research activities that relate to diagnosis, risk factors and treatment of venous and arterial thromboembolic disease.



For information, please contact:

Dr. Susan Kahn
514-340-7587

susan.kahn@mcgill.ca

Thrombosis Clinical & Research Fellowships - Up to 3 positions

Applications are encouraged from MDs who have completed or who will complete General Internal Medicine, Respiriology and/or Hematology training. Foreign medical graduates with equivalent qualifications are eligible.

Applicants may apply to one of three training streams:

- 1.) Clinical Fellowship**, one-year—To consolidate expertise in thrombosis.
- 2.) Clinical and Research Fellowship**, 2-3 years (to become a clinician investigator in thrombosis (Fellows enroll in the Master's of Clinical Epidemiology Program at the University of Ottawa).
- 3.) Clinical and Education Fellowship**, 2-3 years (to become a clinician educator in Thrombosis. (Fellows enroll in a Master's in Education).

To apply, please contact:
nlangois@ohri.ca



Details are also available on the CHS website.

LEUKEMIA/BONE MARROW TRANSPLANTATION FELLOWSHIP VANCOUVER

The Leukemia/Bone Marrow Transplantation Program of British Columbia offers 1 or 2 Year fellowships to provide advanced training in the management of adults with hematological malignancies including all aspects of allogeneic and autologous hematopoietic stem cell transplantation (HSCT).

Candidates should be registered in, or completed a recognized hematology or oncology training program.

For more information: leukemiabmtprogram.org

Interested candidates should submit
a CV and names of three references to:

**Dr. Donna Forrest, Fellowship Director,
Leukemia/BMT Program**

BC Cancer Agency & Vancouver General Hospital

Phone: (604) 875-4089

FAX: (604) 875-4763

Email: dforrest@bccancer.bc.ca



BC Cancer Agency

CARE + RESEARCH

An agency of the Provincial Health Services Authority



Membership Matters

The Canadian Hematology Society has represented all physicians and scientists with an interest in the discipline in Canada since its founding in 1971. Our society now has over 370 members.

Active Membership is open to physicians engaged in the practice of clinical or laboratory hematology in Canada and to any persons doing scholarly research in hematology in Canada.

In appropriate cases, the requirement for a university degree or other qualifications may be waived if in the opinion of the Executive Committee the candidate is making significant continuing contributions to science.

We welcome residents and fellows in approved university training programs in hematology or hematological pathology as **Associate Members**. Associate members will not be required to pay dues until the completion of training.

Emeritus Membership is open to individuals at the age of 65 or those who were active members and request a transfer of status with adequate reason. Emeritus members will not be required to pay a membership fee.

Non-members may be invited to become **Honorary Members** of the Corporation by virtue of their outstanding contributions to any discipline which is of importance to hematology.

CHS members are reminded ...

that dues for the year 2014, are due on January 1, 2014.

Your \$75. annual dues payment may be made online at the CHS website: www.canadianhematologysociety.org

Or mailed to: **Canadian Hematology Society, 199-435 St. Laurent Blvd., Ottawa, Ontario K1K 2Z8**
Please provide the following information with your payment:

2013 Membership Renewal: Canadian Hematology Society

Membership Status

Active ☐

Associate ☐

Emeritus ☐

Has your status changed?

Yes ☐

No ☐

Name: _____

Title: _____

Email: _____

Work Address: _____

Work Phone: _____

Work Fax: _____