Leukemia Program Newsletter

Spring 2015

Princess Margaret Cancer Centre is a World Leader in Myeloproliferative Neoplasms

MYELOPROLIFERATIVE NEOPLASMS (MPN) ARE DISTINCT BUT INTERRELATED GROUP OF DISEASES. Patients with Polycythemia Vera have increased number of red blood cells (oxygen carrying cells). Essential Thrombocytopenia patients have elevated platelets (clotting cells) and patients with Primary Myelofibrosis have excess scar tissue in their bone marrow. The JAK2 tyrosine kinase sends growth signals to cells. In a majority of patients with these three diseases, this JAK2 is mutated and is overactive. More information about these diseases can be obtained from website of the Canadian MPN group (http://mpncanada.com).

Several drugs that block the JAK2 tyrosine kinase have been tested in clinical trials for patients with myelofibrosis and MPN. Ruxolitinib is one of these drugs and is approved to treat some patients with myelofibrosis. Ruxolitinib improves patient symptoms and reduces the size of the enlarged spleen, but does not reduce the amount of disease in the bone marrow. Patients with other types of MPN may also benefit from ruxolitinib and related drugs and these studies are underway.

Patients with Chronic Myeloid Leukemia (CML) have increased white blood cells and a have a specific acquired genetic abnormality in their cells. In CML cells, chromosomes 9 and 22 are joined together resulting in the fusion of 2 proteins, Bcr and Abl. As a result, the Abl signaling kinase is overactive leading to CML. This disease is treated with small molecule inhibitors called imatinib or dasatinib. Many of the drugs now used for the treatment of CML were first tested at Princess Margaret Cancer Centre (PM). Drs. Lipton and Kim are world-leaders recognized for their work in developing new therapies for CML and are also doing important work on understanding the group of patients with CML at greatest risk of progressing to more advanced disease. We hope to make similar breakthroughs to the development of imatinib for treatment of CML for MPN patients.

The PM is a world-leader in treating patients with MPN. Dr. Vikas Gupta has gained international recognition for his ground-breaking work on myelofibrosis. Thanks to a generous donation from the Comper Family, PM will continue to be a world-leader in research into myelofibrosis and related diseases. Under the leadership of Dr. Vikas Gupta, we will answer important questions about these diseases and determine how they start and why some patients progress to acute leukemia. We will establish a MPN referral centre to help treat patients with complex MPN diagnoses and recommend treatment at our center or hospitals closer to home. According to Dr. Vikas Gupta, “There are very few programs dedicated to rare blood disorders such as MPNs. The Elizabeth and Tony Comper MPN Program at The Princess Margaret will be the first such program in Canada. The mission is to advance basic, translational and clinical research leading to improved outcomes of these disorders.

Our work on MPN helps provide our patients with world-class care and helps Princess Margaret be a Top 5 cancer research centre.
What is MDS?
MDS is a bone marrow disorder characterized by the improper production of healthy blood cells. MDS is considered a genetic disorder, but it is not hereditary. Genetic changes in the bone marrow cells are associated with MDS. These genetic changes include loss of the long arm of chromosome 5 (5q deletion) or chromosome 7 (7q deletion). Recent studies have identified mutations in epigenetic regulators (which alter DNA structure) and RNA splicing factors (which affect the conversion of RNA into protein).

What are the risk factors for MDS?
Increasing age and prior treatment with chemotherapeutic drugs or radiation therapy increases the chance of MDS. There is a slightly higher occurrence of MDS in males and in Caucasians.

What are the signs of MDS?
Many people with MDS don’t have symptoms and this disorder is picked up on lab testing. More than one-half of MDS patients are anemic (low red blood cells and hemoglobin) and about one-quarter have low platelets (clotting cells). Hepatomegaly (enlargement of the liver) or splenomegaly (enlargement of the spleen) are uncommon.

How is MDS Diagnosed?
Lab tests must be performed in order to accurately diagnose MDS. These include a complete blood count, peripheral blood smear and bone marrow assessment. Examining the genetic changes in the bone marrow and/or blood is also part of the diagnosis. Other tests are also done to rule out other causes of low blood counts.

What are the treatments for MDS?
Since MDS is a disease of the elderly, steps to maximize supportive care in order to maintain a high quality-of-life are critical. Treatment may include blood transfusions in order to improve anemia. Treatment is sometimes provided to decrease the need for blood transfusions and prevent progression to Acute Myeloid Leukemia. Azacytidine is a treatment that is helpful for some patients. This drug is given as an injection for 6 to 7 days every 4 weeks and can improve the blood counts, increase survival and delay the progression to leukemia. Some patients can receive erythropoietin to improve anemia. Lenalidomide is used to treat patients with 5q- syndrome. In some patients with MDS, blood and marrow transplants are helpful and can cure the disease. Clinical trials are underway at the Princess Margaret with new drugs that we hope will improve the treatment of this disease.

Additional information can be gleaned at:
http://www.lls.org/diseaseinformation/myelodysplasticsyndromes/
Traditional treatment of Acute Myeloid Leukemia involves administration of daunorubicin (for 3 days) and cytarabine (for 7 days), referred to as “3 + 7”. This regimen was developed in 1973 and is still standard of care 40 years later. However, AML patients have a high relapse rate, suggesting the need for new medicines.

Clinical trials play an important role in the advancement of novel therapies. The advancement of all-trans retinoic acid and arsenic to treat Acute Promyelocytic Leukemia patients and the development of imatinib mesylate (Gleevec) to treat Chronic Myeloid Leukemia are two examples of new agents that were approved after advancing through clinical trials.

Deborah Sanfelice is a registered nurse and is the team lead in our leukemia clinical trials program. As part of your treatment plan, you may meet Deb and other members of our clinical trials team. We have asked Deb some questions about clinical trials and her involvement in research.

**Where did you receive your nursing training?**

I received my training at the Dorset School of Nursing, England. You might detect a bit of an English accent.

**How did you get involved in clinical research?**

I have always worked within the hematology field of nursing and when the opportunity arose for a new clinical research coordinator in the leukemia programme, I decided to pursue this field as I had an interest in clinical research.

**Why should patients participate in a clinical trial?**

The treatment team examines all aspects of a patient’s current health status. If we believe that a patient is a candidate for a trial, they will be approached. By participating in a trial, our patients help develop the next treatments for this disease and have access to the latest therapies.

**What are the differences between Phase I, Phase II and Phase III clinical trials?**

Phase I clinical trials are important in evaluating safety, finding a safe dosage range and identifying side effects of a new medicine in a small group of patients. If a drug passes this test, then it is given to a larger group of people to determine efficacy and safety in a Phase II trial. Phase III trials are often completed at multiple centres that can recruit large groups of patients to confirm that a new agent is effective, monitor side effects, collect safety information and to compare it to commonly used therapies.

**What are some recent clinical trials that have impacted changes in clinical practice?**

Princess Margaret participated in a clinical trial that evaluated ruxolitinib for treatment of primary myelofibrosis (please refer to cover story). The JAK2 inhibitor, ruxolitinib, was compared to placebo in a phase III clinical trial. Ruxolitinib is now used to treat myelofibrosis patients.

**When you are not at Princess Margaret and taking care of patients, what do you enjoy doing?**

I love to travel, riding my bike, cooking and spending time with my family.

**Please Fill Out Your DART!**

Upon arrival at the outpatient clinic, you will be asked to fill out a DART (Distress Assessment and Response Tool) via paper or iPad. The purpose of this survey is to provide information to your clinical care team regarding your physical symptoms and to provide input on whether you need assistance for dealing with the burden of cancer and additional emotional support and counseling. Your responses will be reviewed by the team at the beginning of your appointment.
Charlie Campbell — An Acute Care Oncology Story

When Charlie Campbell was diagnosed with Acute Myeloid Leukemia (AML) he knew he’d meet many health care professionals at Princess Margaret Cancer Centre. Nurses, doctors, maybe even a dietician, but the idea of needing a Physiotherapist (PT) or an Occupational Therapist (OT) throughout his cancer treatment journey never crossed his mind. During Charlie’s treatment course he experienced complications that landed him in the intensive care unit hospital for a few weeks.

Charlie was referred to a PT and an OT upon his return to the inpatient unit. The referral was made since he was quite “deconditioned and weak”. In the ICU, Charlie had developed a critical illness myopathy in which his muscles had severely atrophied and were barely able to be activated. He was completely bed bound requiring assistance to roll in bed and even to eat. The only movement he was able to do on his own was wiggle his fingers. The critical illness myopathy limited his rehabilitation and often his treatment sessions were shortened due to his profound fatigue. This did not stop Charlie and his tenacity and motivation worked to his benefit.

Charlie, his PT and OT develop rehab goals based on improving the strength of his limbs, transfers, activities of daily living, learning to walk and stand, balance training. His rehab sessions began slowly with passive and assisted movements of his arms and legs in bed, progressing to sitting on the edge of bed with the assistance. As weeks progressed, Charlie saw some active movement slowly return to his limbs and he learned how to stand again with the use of a walker. He also began to feed himself and participate in his self-care. Finally, approximately three months in hospital, Charlie was ready to go home. He had become completely independent with his self-care activities, walking with a walker and climbing stairs and had reached his rehab goals.

The PT and OT are fortunate to provide rehabilitation services to patients like Charlie that require assistance regaining independence. They are proud to be part of the dynamic interprofessional team on the leukemia units at Princess Margaret.

“Kristen, Lindsey and the rest of the “Angels” did the most fantastic job to revive my spirit, hope and lifestyle.”

— Charlie

Leukemia Program Newsletter
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JOURNEY TO CONQUER CANCER
RUN 5K WALK
JOIN US FOR THE 3RD ANNUAL JOURNEY TO CONQUER CANCER – RUN OR WALK ON SUNDAY JUNE 21, 2015.
Participants run or walk in support of any area of cancer research, clinic, lab or patient care programs at the Princess Margaret Cancer Centre. With no fundraising minimums participants raise as much as they can for the area that matters most to them. Our family friendly route passes by the Princess Margaret Cancer Centre in downtown Toronto with 5km, 3km or 1km options.

At the finish line, join us for a celebration filled with lots of food, entertainment and fun for the whole family!

We appreciate your consideration and look forward to seeing you on the morning of Sunday June 21, 2015 at the Princess Margaret Cancer Centre as we run or walk To Conquer Cancer In Our Lifetime.

For further information, please contact: Keith Clarke, Manager, Special Events 416.946.6584 Keith.clarke@thepmcf.ca www.runorwalk.ca