CFA
CANADIAN FABRY ASSOCIATION
volume 8 issue 2
summer 2017

NEWSLETTER

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FABRY INTERNATIONAL NETWORK (FIN) MEETING – MAY 2017

Julia Alton
Executive Director

One place where Patient Advocacy Organization Leaders come together to learn from expert speakers, collaborate and share what is taking place in other Countries around the world. Board member Lee Strauss and Executive Director Julia Alton attended.

Takeaways from the Meeting:

1. Magalistat has been approved in other Counties around the world. In Canada, we are in the approval process and also hoping for approval.

2. There is a World Study taking place, the Fabry International Network is aiming to get at least 500 Fabry patients to participate (currently we have 2 from Canada and need your help to increase those numbers!)

They have developed a survey to collect data on the availability of pedigree testing (the testing of relatives following a diagnosis) and the level of genetic support available to individuals with Fabry disease across individual Fabry International Network (FIN) member countries. This information will identify any gaps with the goal of improving services for individuals with Fabry disease and their families across the globe.

The survey will capture data on:

- Demographics
- Diagnosis
- Pedigree analysis
- Genetic counselling

The survey will be completely anonymous with no patient identifiable data collected.

Please access the survey below:

https://www.surveymonkey.co.uk/r/UnderstandingFabryinfamilies

3. Alice Schmidt from Austria talked about Pregnancy and Fabry: Fabry Disease does not affect fertility. Throughout pregnancy, symptoms can be emphasized due to additional stress on the body.

4. Learned and shared different organizational strategies and ideas from other FIN Patient Organization Leaders around the world.

FABRY & POMPE COLLIDE

Julia Alton
Executive Director

The National Pompe Conference took place on June 10th 2017. Julia Alton did a short presentation on Fabry as both diseases are LSD's and similarities are found. Patients felt it was important to look outward of their own disease and learn different perspectives, down the pipeline we will have the pleasure of hearing and learning from Pompe, MPS, and Gaucher patients at our Patient Conferences.

PATIENT EMPOWERMENT QUESTION:

What does LSD stand for?

GENE THERAPY
A FABRY PATIENT'S EXPERIENCE

Darren Bidulka
CFA Past President

Hello everyone; it has been quite sometime since I have written an article for a CFA newsletter. In this article, I will give my perspective as the first patient in the recent gene therapy trial for Fabry Disease. I volunteered for the gene therapy trial back in the summer of 2016 and had the procedure in January 2017. Before the actual procedure there were many pre-qualification medical tests and now after there is continuing medical tests to monitor the results.
At this early stage, the first goal of the trial was to ensure that it was safe to perform on a person (as opposed to animal testing). I am very pleased to report that I am feeling just fine which is a huge relief to me, my family and friends, and to the research team.

The long term goal of gene therapy for Fabry Disease is to have a long term treatment option where our own bodies start to produce a normal version of the missing or defective alpha-gal enzyme. We can hope that gene therapy with or without some other

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GENE THERAPY
A FABRY PATIENT'S EXPERIENCE *CONTINUED*

treatment options may some day lead to better and better management of Fabry Disease. This gives me great optimism for future generations of the Fabry community.

I encourage everyone to balance hope and optimism for the future with the reality that gene therapy is in the early stages and will take more years of research, refinement, challenges and triumphs to meet its full potential. There is no single medical procedure that can right all wrongs and gene therapy is no different. It may be an incredibly exciting addition to future treatment options, but cannot be called a cure.

We have come a long, long way to get to this point of a trial in a human. Over the years, I have felt that the research for gene therapy research has been a real partnership amongst the researchers and the Fabry patients. The Canadian Fabry community has had way, way more access to the lead researchers to learn about the progress than patients with other conditions normally receive. In return, the Canadian Fabry community, and in particular many patients, have given of themselves by providing bone marrow samples and stem cells to further progress in the research. In addition, the CFA has written letters of support to assist with various grants to fund parts of the research. Thank you to everyone that has contributed.

Stepping back a decade, many of us attended the first CFA National Conference in May 2006. One of the presenters at the conference was Dr. Medin talking about the research team's work on gene therapy. Dr. Medin continued to engage with the Canadian Fabry community by attending many of the national and regional CFA conferences over the ensuing years. Gene therapy was always a topic with keen interest within the Fabry community. If memory serves me, Dr. Medin or one of our specialist doctors has provided an update about gene therapy at almost every CFA conference.

In 2016 the research had progressed to the point that recruitment began for the first human recipient of gene therapy for Fabry Disease. I would like to acknowledge and thank the huge team of medical professionals that have been involved in getting us to this point. Many of these people have volunteered their time; they truly care about making lives better for Fabry patients and others in the rare disorder community. People in the Canadian Fabry community have met many of the lead people on the study team: Dr. Medin and his research teams in Toronto and Milwaukee; all of our specialist doctors including Drs. Khan, West and Sirrs; Dr. Foley in Hamilton (if you donated bone marrow you probably met Dr. Foley); Dr. Auray-Blais in Sherbrooke (has attended CFA conferences and is on the CFDI team); Dr. Keating in Toronto (a transplant doctor); Dr. Rupar in London (testing the enzyme activity levels for all study participants); amongst many others.

The questions that have been asked most often are: how did you decide to participate? What did I have to do? What about the chemotherapy side effects? Do I feel different? Am I still on enzyme replacement therapy (ERT)? did it work?

I mentioned the research teams' long relationship with the Canadian Fabry community because it was a very important part of my decision to participate in the study. I believe all important decisions are a balancing of risks and rewards. In this case, my wife and I spent a lot of time thinking it through. We understood the risks to the procedure however also understood doing nothing also has its risks. Maybe the opportunity to participate would be lost? Maybe I would not meet the eligibility criteria if I waited? Maybe something else would stand in the way? Where we ultimately got to was, the possible rewards outweighed the risks, and we thought we could manage most of the risks by diligently following the advice of the medical teams.

Participating in the trial was a major undertaking so here is a short summary. First I had to meet the eligibility criteria. This mostly involved the medical tests that we are all used to from our regular check up with the Fabry specialist doctors. Next was numerous consultations with the blood and marrow transplant (BMT) clinic. Most of the procedures for the trial were similar to those for a blood cancer patient undergoing a stem cell transplant.

Third we got into the real critical phase. In December the stem cells were collected. The collection process is basically painless albeit it fairly time consuming. It starts with five days of self-injecting a drug that helps the stem cells exit the bone marrow and enter the blood stream. Once enough stem cells are in the blood stream then I was hooked up to the stem cell collecting machine for two, seven hour days. Basically, blood goes out one arm, runs through a machine that separates and stores the stem cells while all the rest of the blood goes back in the other arm. It is more boring than anything else.

The stem cells were sent to Ontario for the gene therapy. I really do not understand what happened to the stem cells so I just say they were 'reprogrammed'. Original stem cells did not produce enough alpha-gal enzyme – reprogrammed stem cells do produce enough enzyme – good enough understanding for me.

In January I got the reprogrammed stem cells back via an IV (just like getting ERT expect it only took ten minutes). But first, we needed to make room for the reprogrammed stem cells to get back into the bone marrow. I mentioned that the stem cell collected in December came out of the bone marrow into the blood stream. Between the collection and the transplant, the bone marrow replaced those stem cells so the bone marrow was 'full' again. The process to make room was a half dose of chemotherapy that was meant to kill of about half of the bone marrow. This is called 'making space' and was done on the Tuesday, and the stem cell transplant was Wednesday.

The next few weeks were all about staying healthy. The impact of the chemotherapy is the blood cells die off. In particular white blood cells (WBC) which are needed to fight off injections and platelets which are needed to clot blood. The WBC and platelet counts drop for about nine days and was severely depleted for about five days. This was by far the most stressful part of the procedure.

On about day fourteen the WBC and platelets started to recover which meant that the reprogrammed stem cells had successfully made their way into the bone marrow (called engrafting) and started doing what stem cells are meant to do. That was a huge relief.

Since the stem cells engrafted, my focus has been on recovery. I am trying to get lots of rest, eat well and exercise.

The possible chemotherapy side effects in the written materials from the BMT clinic were long and somewhat disturbing. I had three major things going for me. First, I was getting chemotherapy but I did not have cancer. I was coming in healthy as opposed to cancer patients who had already done an extensive battle with cancer. Second, I received a half dose. The medical professionals all expected I would suffer far fewer side effects however could not say to what extent. Finally, my wife and I were able to closely control my environment. We followed the BMT recommendations to the letter. We went all out on hand washing, disinfecting all surfaces daily, staying out of public places; basically avoiding anything that might result in me catching a cold or getting an infection. Thankfully, everything worked out as hoped and I had few side effects.

I feel like I have mostly made a full recovery which is a huge win. I feel at least as good as I did before undergoing the procedure. I have lost some physical fitness due to low activity but that is coming back now that I am exercising again. We are in the very early stages so I do not expect to see any 'miraculous' improvements. We are definitely playing the long game here.

For ERT, I restarted it about a month after the stem cell transplant and am back on the usual two-week schedule.

Did it work is the big question. Overall, it is way too early to tell. It will take many more participants in the study, and many years of follow up, to even start to understand the success of gene therapy for Fabry Disease – this journey has just begun! That said, I would split this question into five parts: (1) was the trial safe? (2) did the reprogrammed stem cells produce enzyme? (3) how much enzyme are the reprogrammed cells producing? (4) how long will the reprogrammed cells produce enzyme? and (5) is the enzyme effective in breaking down GB3.

For 1 and 2, I feel fine so the trial seems to have been safe for me and I understand that the cells are producing some enzyme. For 3, I am not sure how much enzyme the cells are producing. I think 4 and 5 are the biggest questions and will take years to answer. For 4, the goal is that the reprogrammed cells reproduce so that as the original reprogrammed cells die off they are replaced by new stem cells that also produce the alpha-gal enzyme. Finally for 5, the goal is that the alpha-gal enzyme produced by the reprogrammed cells is effective in breaking down GB3 just like naturally produced alpha-gal or the alpha-gal we receive via enzyme replacement therapy.

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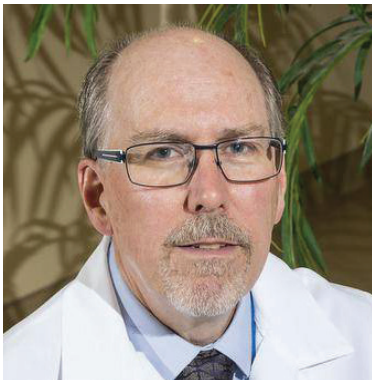

DALHOUSIE RESEARCHER STUDYING DRUG TO COMBAT RARE DISEASE

JAMES RISDON
Halifax Chronicle Herald - June 14, 2017

A simple pill that switches off a genetic trigger could potentially provide a powerful treatment for Fabry disease, a rare disorder that radically shortens the lives of sufferers.

But first, the studies to determine that drug's effects have to be done.

That's expected to take place later this year at Halifax's QE II Health Sciences Centre under the watchful eye of Dalhousie University Department of Medicine professor Dr. Michael West, and at the Alberta Children's Hospital under the supervision of Dr. Aneal Khan.

Fabry disease is caused by a gene on the X chromosome and leaves the sufferer's body unable to properly break down a fatty substance which then leaves deposits on the walls of blood vessels and tissues throughout the body. That then greatly increases the risk of heart attacks, strokes, and kidney failure.

Although Fabry disease can hit both sexes, women are typically less hard hit because they carry two X chromosomes and so the healthy chromosome provides some measure of protection.

"Females are less affected because they have another X chromosome that is not affected. Men only have the one X chromosome . . . so they're severely affected," said Dr. West in an interview Friday.

In the 16-week clinical trials expected to start later this year — if the research method is given the nod by the QE II's ethics committee — the researchers led by West and Khan will measure the effects of the drug **Apabetalone** on 44 patients suffering with Fabry disease. Half of these will be patients already on an enzyme replacement therapy to help their bodies break down those fatty substances. The reason for the two locations is to make it easier to recruit Fabry disease sufferers. There are only 440 of them in Canada.

The clinical trial is being undertaken for Calgary-based pharmaceutical company **Resverlogix Corp.**, which got the green light in May from Health Canada's therapeutic products directorate to go ahead.

Resverlogix is developing **Apabetalone** and having it tested not only for Fabry disease but also for its potentially-important benefits for patients at high risk of cardiovascular disease, diabetes, mellitus, chronic kidney disease, and Alzheimer's.

Sufferers with Fabry disease have a much-shorter life expectancy. Men with Fabry have a life expectancy of only 58.2 years if the disease is untreated, said West. Female patients who do not get treatment have a life expectancy of about 74 years.

Due to that dramatic impact of Fabry disease on life expectancy and the disease's debilitating effects, there is cutting-edge research being done to develop other treatments.

Apabetalone offers hope.

"This is a very unique product," said West. "I don't know of any product like this . . . that affects this gene activity. There are other drugs that affect genes but it is through other mechanisms."

Despite that early promise, it will still take years of clinical trials beyond this initial study at the QE II before **Apabetalone** can — if ever — be used as a treatment for Fabry disease.

It is, however, not the only treatment for this disease in the medical research pipeline.

Earlier this year, for example, Khan conducted a cutting-edge treatment on a Fabry disease patient. Using a genetically-altered virus, Khan injected the right genetic material to combat the disease right into the patient's own stem cells. These cells were then injected back into the patient to be carried by the circulatory system throughout the body.

Resverlogix, which trades on the Toronto Stock Exchange under the RVX ticker, has a market capitalization of just over $173.2 million.

In afternoon trading Friday, the stock slipped 41 cents, or 20 per cent, to $1.64, below the mid-point of its 52-week trading range on news the company is trying to raise another $10 million in equity financing.

The Calgary-based company is offering more than 5.5 million units, each comprised of a common share and a common share purchase warrant, at $1.80 each. Under the offering set to close June 20, the warrants are exercisable over four years at a price of $2.05.

Resverlogix is planning to use the money to fund research and development, including clinical trials of treatments for Fabry disease, working capital and general and administrative purposes.

GENE THERAPY

A FABRY PATIENT'S EXPERIENCE

CONTINUED

his has been a fascinating journey. I had the good fortune to participate in research that may benefit me as well as others with Fabry Disease and other single gene mutation disorders. I am thankful that the side effects were limited and fairly short lived.

To conclude, I would like to thank Dr. Khan and his research team, and everyone on the Blood and Marrow Transplant team at Foothills Hospital. The number of people that took care of me at BMT are too numerous to mention individually but I can say that everyone was amazing (*http://www.magiccalgary.ca/facts.html*).

MRI = MEDITATION RELAXATION INSPIRATION

Lori Culum
CFA Member

Meditate over Medicatation
Fabry patient Lori Culum shares with us her MRI experience and how she has practiced meditation over medication.
Julia Alton
Executive Director

My eyes gently close and I take a slow, deep breath. The enchanting sunset once again appears and promises to captivate me. I sit mesmerized by its painted screen of temporary vibrancy. My toes and fingers slowly submerge into the warm, white, powdered sand.

My hands slowly release the sand like an hourglass. The therapeutic heat from the sun penetrates my face and body, relaxing every muscle. I tune into the sharp, green grasses that line the dunes, swishing like horses' tails. The sweet sound of the rolling waves makes me feel home again. The beach welcomes me with solidarity, but in the distance, I hear a faint voice inviting me to breath in, hold and breath out. That voice comes from the MRI technician and what I have just shared with you is my meditation process for my time in the MRI machine.

Meditation became a survival instinct during my very first MRI in 2006. I made a poor choice of leaving my eyes open when I first entered the MRI machine. I panicked. My heart rate sky rocketed. I instantly felt hot and I thought I was going to pass out. I struggled to keep my composure and then something inside of me said "Do not press that panic button. You can do this." I needed to take control of the situation. I started to take slow, relaxed, deep breaths.

My heart rate calmed down and as my breathing became controlled, I suddenly found myself sitting on Deanlea Beach; a very special beach where I spent every summer, Thanksgiving and Easter with my family. Now, as odd as this may sound, I always look forward to my time in the MRI machine. It is a short period of time that I have just for myself to escape to my special place. The next time you have an MRI, you may want to try this strategy. Rest your eyes and focus on relaxing your breathing; and then let your mind magically take you to your happy place, wherever that may be.

Meditation is very beneficial not only while in the MRI machine, but when practiced on a daily basis.

REMEMBERING FRIENDS

Would you like to have a note of remembrance included in our newsletter? These notices would be for Fabry Patients and Association Members whom we have lost over the years. Please contact us at: *secretary@fabrycanada.com*

DONATIONS AS MEMORIUM

We have been asked if they can make a donation to the Fabry's Charity Association as a Memorium for their family member. The answer is Yes. Please contact us at: *secretary@fabrycanada.com*

GETTING READY FOR SUMMER!

Dr. Seema Kanwal
Balance Medical Center

Its been a long winter and now summer is here! Vacations, BBq's and being out on the beach is what we are all thinking I am sure. At this time of year I am asked often of sun protection. There are nutrients that are important for protecting us. Now this does preclude the use of Sunscreen, as this is important. You want to find a sunscreen that is "Broad Spectrum". Both UVA and UVB contribute to sunburn, skin cancer, and premature aging. UVB, however is what causes sunburns.

Antioxidants are what protects our skin and can reverse damage that is caused by excess sun exposure. These can betaken internally and applied topically.

These are my top 3.

1. Grapeseed Extract: this is from Grape seeds. These are 5-X stronger then many other anti-oxidants. Dosage : 150- 300mg 1-2x per day
2. Vitamin C + Bioflavinoids; found in red peppers, strawberries, citrus fruits etc. the bioflavonoids are key as thye support strong cell formation and can support poor cellular growth thus having an anti-carcinogenic effect. Dosage: 500-1000mg 1-3x per day.
3. Green Tea: at least 2 cups per day help to prevent skin damage and skin tumors.

The top 3 foods to eat are:

1. Beta carotene: found in leafy greens and bright vegetables. Research shows that eating 5 servings of foods that contain Beta-carotene for 1 month is enough to protect your skin from sun damage. Foods high in this include sweet potatoes, cantaloupe, dark leafy greens and broccoli.
2. Lycopenes found in tomatoes and watermelons are excellent skin protectors.
3. Dark chocolate greater then 70% cocoa has been shown to reduce the harmful effects of the sun!

"Patient empowerment is a process that helps people gain control over their own lives and increases their capacity to act on issues that they themselves define as important."

Julia Alton
Executive Director

Location: Waterside Inn (15 Stavebank Rd S., Mississauga, ON L5G 2T2)
Date: Nov. 12, 2017
Time: 9:00am – 4:30pm

The CFA is holding a Pilot Project in Mississauga, Ontario for Fabry patients and families. The workshop will include a Fabry 101, mutation specific content, and will explore different avenues of health for patients.

At this time, this meeting is only open to Ontario patients as it is starting as a Pilot Project. With patient feedback, and if a successful meeting is held, the project will move forward for all Provinces to attend.

Registration will be opening soon.

PATIENT EMPOWERMENT ANSWER:

Lysosomal Storage Disease - A group of approximately 50 rare inherited metabolic disorders that result from defects in lysosomal function. Lysosomes are sacs of enzymes within cells that digest large molecules and pass the fragments on to other parts of the cell for recycling.

THANKS TO OUR SUPPORTERS

We would like to thank all of our supporters that helped make this newsletter possible.

We receive financial support from thee Pharmaceutical companies who are currently providing hope for Fabry patients through their research and the products they provide.

Amicus Therapeutics
genzyme
Shire
PROTALIX Biotherapeutics

We would also like to thank all of the physicians, specialists and medical professionals that have helped in so many ways. From providing guidance on medical terms and details to caring for members of our community every day.

And of course we would like to thank all of the patients and family members that have volunteered their time and energy to assist in all the many ways that are necessary in the creation of such a large effort. It is through their efforts that we hope to inform and build a community of Fabry patients for the benefit of patients, their families and caregivers.

MAKE A DONATION

Would you or a family member like to make a donation so that we can continue to educate and advocate for the best treatment as well as communicating with and for Fabry patients in Canada?

The Canadian Fabry Association (CFA) is a registered not-for-profit organization.
If you are interested in making a charitable donation and would like a tax receipt, please make your cheque payable to The Fabry's Charity Association.

100% of donations to the CFA are used to promote education, patient support and access to treatment for Canadian Fabry patients. You can make donation cheques payable to The Fabry's Charity Association and mail the cheque to us.

Send the cheque to:
The Fabry's Charity Association
748 Kelly Street
Thunder Bay, ON
P7E 2A1
or register online by visiting our website:
www.fabrycanada.com

Thanks for your donation to the CFA! It goes to help Canada Fabry patients, their families and caregivers.