The Inherited Metabolic Disorders News

Fall 2005 Volume 2 Issue 3

In this Issue

From the Editor

Hello to Everyone,

With the weather as beautiful as it has been lately, it's hard to believe that Christmas is just a few short weeks away!

I hope that you enjoy the latest issue of the **Inherited Metabolic Disorders News**. As always, I welcome your input and suggestions!

Merry Christmas to everyone!
Janice Little

From Dr. Chitra Prasad

Dear Friends,

Greetings!

The past few months have been quite productive for all of us on a provincial level. We have seen some landmark decisions lately especially regarding the newborn screening in Ontario. This is a combined effort of many including the families, physicians, health professionals, government officials and others. This will bring a new era of medicine to Ontario. Clearly a number of steps will have to be taken regarding education of the families, family physicians, pediatricians and other specialists. We look forward to a very exciting time in the future where we will be able to make a difference in the care of our young patients.

We were extremely fortunate to have an internationally renowned physician and researcher Dr. Jaak Jaeken from Belgium come and visit us and talk on congenital disorders of glycosylation, a very challenging group of disorders. This visit was made possible as a result of close collaboration of Children's Hospital of Southwestern Ontario and Hospital For Sick Children Toronto.

As I look at these achievements of our families and our metabolic team I am reminded of the great saying by Lao-Tzu:

"The journey of a thousand miles begins with one step."

With best wishes
Chitra Prasad

Personal Stories

Katelyn

After an uneventful and very quiet pregnancy we were blessed with our first child Katelyn, 5 days past my due date weighing 8 lbs and 21.25 inches long. She did not cry right away and was taken to the nursery for 1.5 hrs before I was able to see and hold her. She had an Apgar score of 7/8.

Although Katelyn did not show any interest in waking or eating, we were discharged after 24 hrs without direct visit from the doctor. Since breast feeding was an issue, I decided to stay one more night. 51 hrs after her birth I was pushed out the door and told to go home, relax and she would eat. We continued to struggle with the feeds and settled for feeding with an eye dropper every 3 hrs. We would force 1-2oz into her over a 2 hr time period around the clock. She continued to lose weight throughout the first month and slept 21-22 hrs a day. She would not cry when she was hungry, she would not wake to eat; she often turned gray around the mouth after feedings because she was unable to release any gas, which was abundant.

At 1 month old she became even more lethargic and I could not get any food into her, she had diarrhea and was in obvious pain so we took her to the local hospital. She was so dehydrated they could not get blood from her and they immediately took her to Windsor Hospital where they began a series of tests to determine the problem. Katelyn's electrolytes were off the chart and her blood was a dangerous mess. She was kept stable with transfusions and fluids but still they could not find the source of the problems. They were completely baffled.

After 6 days they decided to fly her to the London's Children's hospital where she stayed in the Critical Care unit for 3 weeks. Every department was contacted and observed Katelyn to see if they could contribute some input to the cause of Katelyn's illness. The 6 weeks in London consisted of several tests, procedures, surgeries, blood transfusions, resuscitations and other extensive investigations. She was taken off TPN, tried on formula which started the vicious cycle all over again. We were told that we were living in the unknown and they could not tell us anything except that we should not get our hopes up. Katelyn was very happy, rarely cried but could not hold her head up yet.

We were seen by the metabolic team. Dr. Chitra Prasad was new to the hospital and Katelyn was her first patient. She automatically thought of testing Katelyn for CDG (Congenital Disorder of Glycosylation) and had some blood sent to Winnipeg for testing. Katelyn was transferred to Sick Kids in Toronto for further examination and began another series of tests which lasted for 7 months. After the first 4 weeks and not knowing she was already being tested for CDG, they too decided to test her. They performed a liver biopsy after sending off the blood work which punctured a blood vessel and caused internal bleeding. Since Katelyn's clotting factors were seriously abnormal this was very dangerous. It took a 6hr angiogram to successfully embolize the puncture.

There were several attempts to put Katelyn on a special $75/can formula called neocate but she was still unable to digest any proteins. After a week she would get severe diarrhea and cramping and would return on TPN. She remained happy at all times and flashed a smile to anyone who would look; she could wrap anyone she met around her finger in an instant. She was slowly reaching milestones and we were unsure how much delay was caused by her illness and/or the time spent in the hospital. Due to a compromised immune system and the amount of time spent in the hospital she caught many infections in the hospital like rota virus, RSV, c-diff. It caused several set backs but Katelyn continued to fight for her life with an amazingly optimistic attitude and inspired many people including the medical staff. For 5 months it seemed every time it was decided we could go home there was another setback of a virus/ infection and she also began having seizures. The first one needed resuscitation and two weeks later had an anaphylactic reaction to an ice cream bar also requiring resuscitation. A g-tube was inserted with hopes of soon being able to take a formula and for her med's.

When Katelyn was 6 months old and 2.5 months after the 2nd test was done for CDG it was confirmed that she did indeed have the rare metabolic disorder. After a phone call from Dr. Prasad we also found out the first test came back negative, probably because she was so young. Thankfully her pediatrician in Toronto did not know about the first test otherwise the 2nd test might not have been performed.

Brian and I took a TPN training course and finally after 242 days in the hospital and Katelyn was 9 months old, we could go home and be a family, just in time for Mother's Day! The next 3 months at home were wonderful. Katelyn was so happy and started hitting milestones immediately. She was going far beyond what was expected for her 1C typing which was confirmed 5 months after the CDG diagnosis. We could not have been more proud of Katelyn. We gave her a bottle of sugar water and she immediately drank from it which was amazing, she did not drink from one in 7 months. It was a challenge and scary to be solely responsible for the TPN and everything involved but we were always grateful to be able to be home. Brian would drive for 4-5 hrs after a full day of work every Friday to spend time with us before heading back out Sunday night, needless to say this new routine was the ultimate life for us. We even learned to do our own blood draws via the PICC line and take them to the lab ourselves.

Katelyn got to spend her 1st birthday at home with family and friends before getting sick 3 weeks later and being flown back to Toronto. The whole cycle was starting all over again except this time we were sent home in between admissions. We would have to drive or fly back to either the London or Toronto children's hospitals after 4-7 short days at home, and usually in a bad snow storm. The next 7 months were sometimes touch and go, she could laugh one minute and 1 hr later spike a dangerous fever or bleed from any open site in her body. She spent time in the PCCU a few times and we were unsure of the outcome. The causes were once again undetermined each time she was admitted, sometimes her albumin would drop below 10, her platelets would drop between 10-25, her hemoglobin in the low 60's and the clotting time could vary from 80 and reach as high as 180. On top of that she would have fevers with unknown reasons, her liver functions were elevated, had ascites and edema (fluid problems), enlarged spleen and the list was growing. Nothing was tolerated in the stomach at all anymore and the seizure medicine needed to be administered via PICC line. We had to fight for that and learn to do it ourselves because it was never done by a parent at home and home nursing was not willing to come to our home to do it.

With a miracle at hand, Katelyn stayed home for 4 weeks straight in February 2005 and received a few transfusions at the Windsor Hospital, to date she received 103 blood/ blood product transfusions. The pediatricians were starting to wonder if her liver was going to fail and by March we had to admit her back to the hospital for the last time. After 2 weeks the liver functions were out of control and she could no longer fight, she went to be with the Angels who graciously looked over her for 19 months. She was also with her best friend, another child with CDG who passed 3 weeks prior.

Reading this you might think that life was unfair or have pity for us but we are extremely fortunate people. We were able to have had the privilege of caring for and raising one of Life's Little Miracle's and will always be grateful for the opportunity to spend 18 months longer with her than we probably would have if miracles didn't exist. We are privileged because not many people ever get the opportunity to be touched by such an entity and a power. Katelyn changed many lives and accomplished more in her short life than most people do in a lifetime. She taught us what life is really all about and that it doesn't matter what obstacles come your way, always smile, enjoy and always appreciate what you have.

We are forever grateful to the many wonderful doctors, nurses, PSA and other hospital personnel who continuously went above and beyond to help not only Katelyn but us too.

Please feel free to visit Katelyn's webpage at http://www2.caringbridge.org/ca/katelyn

Debbie, Katelyn's mom

"Children think we are their strength, the truth is they are ours"

Madeline

Madeline was born on March 28, 1998 and seemed to be a perfectly healthy baby. She had great Apgar scores and everyone in the hospital thought she was a normal healthy baby. I had troubles feeding her from about day 3 and she mostly refused to suck for more than 5 minutes at a time. I nursed Madeline for 13 months and basically force fed her, but she continued to gain weight (very small amounts) throughout her 1st year.

She was very colicky for at least 6 months and never slept through the night until about 14 months. At 3 months we noticed that she could not hold her own head up. We went to the doctors, and they took blood and chest x-rays. That was the start to the long road of diagnosis and tests and mis-diagnosis. Madeline saw many specialists and had many tests -- EEG, EKG, and then an MRI that showed a Dandy Walker Variant in the brain. Still no idea what was wrong. Finally at about 11 months we saw Dr. Siu and she inputted into the computer the symptoms -- Dandy Walker variant, large tongue, fatty deposits in abnormal spots, low muscle tone, lazy eye (turning inward), failure to thrive, and out came CDG. She had never heard of it and when she read about it she thought it explained Madeline perfectly. We did the test, and 6 weeks later had the diagnosis. We waited a year to find the type which is 1A & 1C.

During Madeline's second year we went through extreme eating problems, and vomiting constantly every day. We just couldn't get her to eat and then to keep the food down. We were determined not to have a feeding tube and luckily things eventually got better. With all the eating problems we also had the battle with constant colds and sicknesses. Again we were so lucky that Maddy was never sick enough to warrant hospital care. So many of these children spend so much time in the hospital battling sicknesses and seizures and strokes. She did not eat regular food until 2, and did not talk until about 3; it has been a long road.

Anyway, today Madeline is 7 and attends regular school in Grade 2. She is a bright happy, outgoing, and funny little girl. She still does not walk unassisted, but has learned to use a walker (she named Bob) which gives her great independence. She has been extremely healthy lately and we have been told that CDG children's health usually stabilize from the ages of 6 onward. She is loved by all the children at the school and has lots of friends. She gets involved in all the activities, and loves being part of the group. She does gymnastics and loves to swim. Maddy is a great kid who just wants to do everything her sister does, and actually tries. You will not meet a more determined child, or wicked sense of humour.

When I look back at the early years with CDG I don't know how we made it through those years. Those long nights with a sick little child where you never knew how sick she could get just praying that you would avoid that hospital stay that so many of these children experience. Now that Maddy is 7 and very independent we just pray to keep out of the emergency room from all her falls. Last year she received 5 stitches for a fall and a new concussion for another fall. Unfortunately our new reality of today is keeping Maddy independent yet managing her risk for falls -- not easy with a determined, stubborn little girl.

Jody Goldhawk
Mom to Madeline (DOB 03/28/98), type 1A & 1C

Resources

- **Genetic Alliance**
www.geneticalliance.org

- **National Newborn Screening and Genetics Resource Center (NNSGRC)**
www.genes-r-us.uthscsa.edu

- **The CDG Family Network**
www.cdgs.com

Kids Korner

October, November and December birthdays:

Child's Name	Metabolic Disorder	Birthday	Age
Michael	PKU	October 12, 2001	4
Mitchell	PKU	November 19, 1990	15
Adam	PKU	November 2, 1998	7
Raphael	PKU	October 23, 1999	6
Laura	PKU	December 29, 1993	12
Vanessa	PKU	October 6, 2003	2
John	PKU	October 25, 2004	1
Brady	ALD	October 2, 1993	12
Joseph	Amish Microcephaly	December 7, 2002	3
Cole	Arginase Deficiency	November 1, 1997	8
Michael	CPS Deficiency	December 16, 1996	9
Ryan	MSUD	October 25, 1992	13
Mackenzie	Metabolic Disorder	November 16, 1999	6

ALD - Adrenoleukodystrophy
CPS Deficiency - Carbamyl Phosphate Synthetase Deficiency
MSUD - Maple Syrup Urine Disease

Happy Birthday Everyone!

How to Make a Donation

Donated funds are used for future Metabolic Family Workshop Days as well as further teaching and education. If you wish to make a donation, you may send a cheque to:

The Children's Health Foundation C/O Medical Genetics Program of Southwestern Ontario
Attention: Janice Little
800 Commissioners Road East
London, Ontario, N6A 4G5

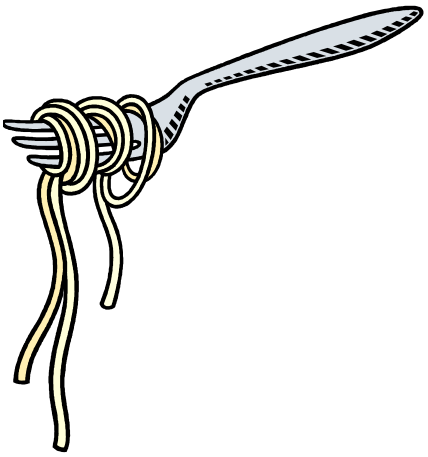
Charity # 118852482 RR0001

Your donation is tax deductible, and an income tax receipt will be mailed to you.

Thank you!

Suzanne's Corner

Suzanne Ratko
Registered Dietitian



Nutrition Update

As of November 1, 2005

New foods covered by MOH for those individuals with metabolic disorders requiring a low protein diet:

Cambrooke Foods: American Cheese Slices
Cambrooke Foods: Swiss Cheese Slices
Cambrooke Foods: Pasta Elbows
Cambrooke Foods: Pasta, Portabella Spinach Ravioli
English Bay: Dairy Free, Powder

More formulas for PKU are now covered. Contact Suzanne if you want to learn more about these formulas!

Check this out:

Apples to Zucchini: A Collection of Favorite Low Protein Recipes (2005) by Virginia Schuett and Dorothy Corry

Finally, registered dietitian Virginia Schuett and PKU parent Dorothy Corry have completed this 512 page cookbook! There are 562 healthy & delicious recipes in 12 chapter's: Salad Celebrations; Soup's On; Bread and Beyond; Pasta, Please!; And Everything Else.

To purchase a copy of this cookbook, check with your local bookstore or call SHS North America @ 1 877 482 7845.

What's New

Newborn Screening Expansion:

On September 7, 2005, the Ontario government announced that its newborn screening program would be expanded by adding 19 tests for inherited metabolic disorders. At the present time, Ontario only screens for PKU and congenital hypothyroidism.

The new tests to be added fall under three categories:

1. **Organic Acid Disorders (OA)**

These tests include:

- Isovaleric acidemia (IVA)
- Glutaric Acidemia type 1 (GA I)
- 3-OH 3-CH3 glutaric aciduria (HMG)
- Multiple carboxylase deficiency (MCD)
- Methylmalonic acidemia (mutase deficiency) (MUT)
- 3-Methylcrotonyl-CoA carboxylase deficiency (3MCC)
- Methlymalonic acidemia (Cbl A,B)
- Propionic acidemia (PROP)
- Beta-Ketothiolase deficiency

2. **Fatty Acid Oxidation Disorders (FAOD)**

These tests include:

- Medium-chain acyl-CoA dehydrogenase (MCAD)
- Very long-chain acyl-CoA dehydrogenase deficiency (VLCAD)
- Long-chain L-3-OH acyl-CoA dehydrogenase deficiency (LCHAD)
- Trifunctional protein deficiency (TFP)
- Carnitine uptake defect

3. **Amino Acid Disorders (AA)**

These tests include:

- Maple syrup disease (MSUD)
- Homocystinuria (due to CBS deficiency) (HCY)
- Citrullinemia (CIT)
- Argininosuccinic acidemia (ASA)
- Tyrosinemia type I (TYR I)

To read more about this exciting announcement, visit
www.newswire.ca/en/releases/archive/September2005/07/c6715.html

Visiting Professor from Belgium speaking about Congenital Disorders of Glycosylation

On Thursday November 3rd, Dr. Jaak Jaeken MD PhD, an internationally recognized expert on Glycosylation Disorders, came to LHSC and gave an extremely informative talk on the subject. Approximately 50 people attended including families, physicians and allied health care professionals. We are grateful to the Department of Pediatrics, HSC Toronto and Centre of Excellence (Genzyme) for supporting this event.

Dr. Jaeken (left) meets with the families after the talk

Announcements

Christmas Party

It has been decided that this year there will be a New Year get together instead of a Christmas party. If anyone is interested in participating, you can either call or email Jennifer Culp (parent contact):

Tel: 1.519.632.9924 Email: donjen2000@hotmail.com

Featured This Issue

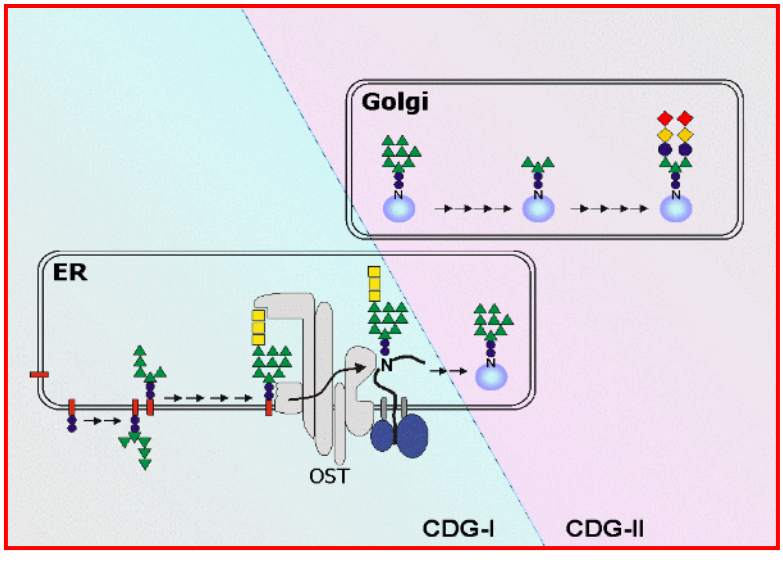
Congenital Disorders of Glycosylation (CDG)

By Chitra Prasad

Congenital disorders of glycosylation, (CDG), also known as carbohydrate deficient glycoprotein syndromes, are multi systemic disorders, in which many glycoproteins are deficient or have reduced carbohydrate side chains. Dr. Jaek Jaeken was the first one to describe these disorders. The clinical features include failure to thrive, hypotonia, inverted nipples, unusual fat deposits, mental and psychomotor retardation, stroke-like episodes, protein losing enteropathy, hypoglycemia, and generalized dysmyelinization. Many subtypes of congenital disorders of glycosylation have been described based on the isoelectric focusing patterns of transferrin and on clinical features. Enzyme deficiencies have been reported in at least four of the subtypes: Type Ia, phosphomannomutase is the most common deficiency. Sialic acid is the terminal sugar residue of the two carbohydrate side chains of transferrin. Any block in the synthesis of these side chains will result in an undersialylated transferrin molecule. Because it is a major serum protein and is easily detectable, transferrin is utilized as a marker in screening for congenital disorders of glycosylation. Although many congenital disorders of glycosylation are yet to be described, CDG should be suspected in patients with clinical features mentioned above. The inheritance is Autosomal recessive for most subtypes of CDG. Unfortunately there is no treatment except for type 1b where mannose is supplemented. Active research is ongoing in a number of different centers around the world to find a cure for this group of disorders.

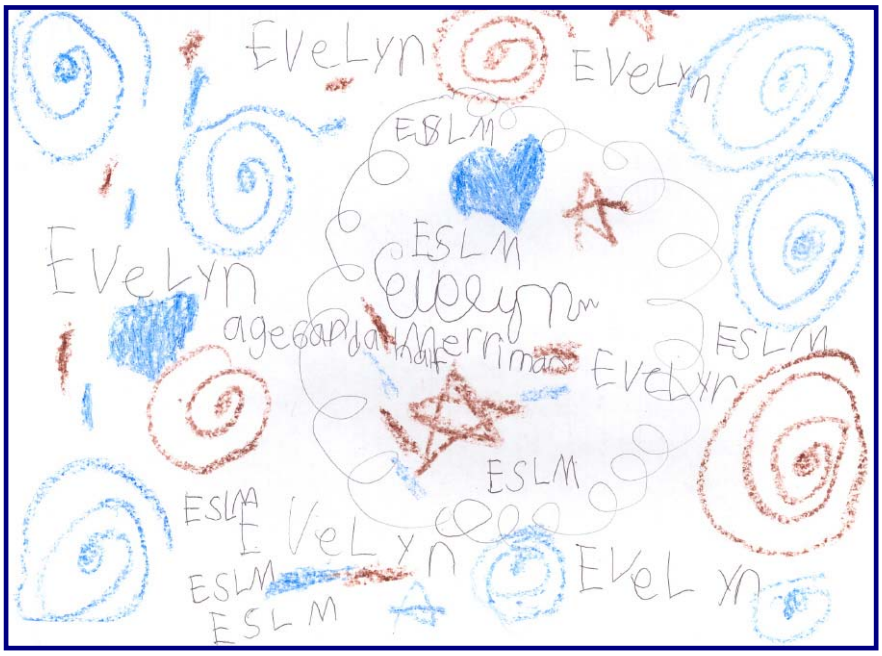
References:

http://www.ggc.org/Diagnostics/Biochemical/glycosylation.htm
http://www.euroglycanet.org/
http://www.cafamily.org.uk/Direct/c64.html
http://www.euroglycanet.org/home.html



Glycoslyation Pathway

http://www.cdgs.com/_about.html



By Evelyn
Age 6

Contact Information

Editor: Janice Little
LHSC - Medical Genetics Program of Southwestern Ontario
Tel: 1.800.243.8416
1.519.685.8453

Email: janice.little@lhsc.on.ca
Website: www.lhsc.on.ca/ programs/rmgc/metaboli.htm

Yahoo Online Chat: health.groups.yahoo.com/group/metabolic_disorders
Post Message: metabolic_disorders@yahoogroups.com

Parent Support Contact: Jennifer Culp

Tel: 1.519.632.9924

Email: donjen2000@hotmail.com