THE EVANOSKY
FOUNDATION

We Win in the End

Acid Maltase Deficiency Association Article
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I think there are times in life when hardship and heartache occur and that a family's tragedy needs to be shared so that individuals and future generations can learn from this experience. As a result, I find it important to tell you my story so that you have a solid understanding of my tragedy and at the same time learn what is being done to no longer have this story be told by another family ever again. So with that, this is my story.

In November of 2001 my wife Sonya and I gave birth to twin boys, John and Christopher. It was a difficult pregnancy in that Sonya was bedridden for 36 days in the hospital and the boys were delivered early at 34 5/7 weeks by emergency cesarean. After the birth they both were in the NICU for 9 days due to a weak sucking reflex and difficulty regulating body heat. As far as their growth, they progressed normally, but were at the bottom of their adjusted age in reaching their developmental milestones. At 15 months, they hit a plateau and began physical therapy. At 24 months they were still unable to walk and we had the boys evaluated by a neurologist. John was given an MRI and it revealed damage to the white matter of the brain. The neurologist, using the facts that were presented--the premature labor, emergency cesarean, multiples pregnancy and NICU admission—clinically deemed that the boys had Periventricular Leukomalacia (PVL), a form of cerebral palsy.

The boys continued to progress slowly and we had both boys involved in various types of therapy (speech, developmental, occupational and physical) to aid in their development. They were both developing nicely and could walk up to a quarter of a mile to the park in their Kaye rear walkers. We were setting ourselves up to live a life that we thought would include children with a mild case of cerebral palsy.

In January of 2004, Sonya and I had our third son, Jack. This pregnancy, opposed to the first, was a complete success. Jack was delivered by scheduled cesarean and in all accounts Jack was a healthy baby boy.

In the fall of 2004, we began to notice that John and Christopher were beginning to lose their milestones. They were losing the ability to walk, their speech was becoming debilitated, and their ability to eat was being affected. As a result, we had them reevaluated by the same neurologist who had made the original diagnosis of PVL. In December of 2004, at our insistence, he ran a metabolic panel of various tests. Sure enough, the outcome for both boys was that they possess the mutated gene that gave them the late infantile form of metachromatic leukodystrophy (MLD). Metachromatic leukodystrophy (MLD) is a lysosomal storage disorder that primarily affects the neurological system. Children who have this disease maintain their cognitive abilities but lose many of their developmental milestones by age two and are unable to walk, talk, or feed themselves. Life expectancy for the infantile form of this disease is approximately 6 years of age.

Upon this diagnosis, Sonya and I diligently researched what our options were for John and Christopher. We were told by members of the medical community that there was nothing we could do and that we needed to go home and make the boys comfortable. However, upon doing further research on the internet, we discovered that in some instances, depending on disease progression, a bone marrow/stem cell transplant was a potential option. We learned that Duke University was one of the premier universities in the world when it came to stem cell transplants and we immediately contacted a doctor there. Unfortunately, upon describing John and Christopher's physical symptoms, we were told that a transplant was not a viable alternative.

Once it was determined that John and Christopher had tested positive, Jack was tested the next week. Unfortunately, two weeks later, at 13 months of age, Jack also tested positive for MLD. Because he had no visible symptoms, the doctors at Duke indicated that Jack would most likely qualify for transplant. After a series of tests at Duke, Jack was deemed a viable stem cell transplant candidate and on April 1, 2005, Jack received an unrelated cord blood transplant.

As it currently stands, Jack is 30 months post transplant and is doing well. It appears that disease progression stopped somewhere between 9 and 12 months post-transplant. Because of his late diagnosis, there is some damage to his body and brain, but we hope through extensive therapy that Jack may be able to overcome the damage caused by an almost too late diagnosis. At this point in time, John and Christopher are still considered to be terminal but through very aggressive home care and the help of our extended family, their quality of life is excellent and they are two very happy little boys whose bodies just do not work.

Why is it important that I share my story with you? The purpose is to show you the importance of newborn screening for lysosomal storage disorder diseases so that they can be correctly identified and treatment provided before symptoms appear. Newborn screening provides parents with the opportunity to explore viable treatment options, develop care plans with the appropriate medical professionals, avoid the frustration of no diagnosis or misdiagnosis, and make appropriate family planning decisions.

For many years now, a number of researchers have been involved in the development of newborn screen assays for a number of lysosomal storage disorder diseases. Lysosomal storage disorders have been recognized as one of the major groups of genetic disorders affecting children. With over 40 different disorders and a combined prevalence of up to one in 5,000 births, this group of disorders is a major public health problem and places an enormous burden on affected individuals and their families as well as the public and private health systems. Early identification and diagnosis is essential since the most serious and debilitating symptoms, particularly neurological, muscular and skeletal, manifest very early in life.

At present, there are high throughput assays available for Pompe, Gaucher, Fabry, Niemann-Pick A and B and Krabbe diseases. Due to technological advances in chemistry and tandem mass spectrometry, one test can be used to detect theses five lysosomal storage disorders, thereby reducing cost and effort to a public health lab.

In addition, in 2006, the Centers for Diseases Control and Prevention's Newborn Screening Branch launched the Newborn Screening Translation Research Initiative (NSTRI). The purpose of NSTRI is to provide laboratory support for the methodical expansion of newborn

screening through technology development, quality assurance, education and training, and partnerships with public health laboratories, academic centers, foundations, and private-sector companies. NSTRI has several ongoing projects which focus on conditions that are not currently part of routine newborn screening but are under consideration or may be implemented in the future.

One of these projects is directed toward newborn screening for certain lysosomal storage disorders. As part of this project, NSTRI will establish laboratory quality-control and proficiency-testing programs for assays used to detect Fabry Disease, Gaucher Disease, Krabbe Disease, Niemann-Pick Disease and Pompe Disease. NSTRI will also provide supplemental quality control for the reagents that will be used in the assay that can detect the five lysosomal storage disorders stated above.

The distribution of these reagents will be coupled with a program that provides training, quality assurance, and laboratory support. Participating laboratories will be enrolled in an ongoing data gathering activity to assess the performance of the reagents in the hands of the end users. At present, it is anticipated that these LSD newborn test reagents will be available at no charge through the Centers of Disease Control Foundation. This program will be operational by early 2008.

Putting the science and my story to the side, newborn screening advocate organizations have already created legislation in the state of Illinois to implement lysosomal storage disorder newborn screening for Pompe Disease, Gaucher Disease, Fabry Disease, Niemann-Pick A and B Disease and Krabbe Disease. This legislation will become a public act on November 5th, 2007. One of the organizations involved in the legislative advocacy is the Acid Maltase Deficiency Association. Please visit http://www.ilga.gov/legislation/billstatus.asp?DocNum=1566&GAID=9&GA=95&DocTypeID=SB&LegID=29714&SessionID=51 to view the actual language of the bill. The bill number is IL SB1566.

Even though Illinois is the fifth largest birthing state in the US (~185,000 babies born annually), the total number of babies born nationwide is ~4 million. As the reader, I ask that you get involved in advocating to your state legislators about lysosomal storage disorder newborn screening and the benefit this type of screening would have to the future children born in your state. In doing so, we all leave this place a little better than we found it.

We Win In The End,

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