A New Treatment for Congenital Nonprogressive Nemaline Myopathy

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In 1963 Shy and his colleagues[1] discovered a new congenital nonprogressive myopathy associated with rod-like structures in muscle fibers. Shy termed this new disease Nemaline Myopathy. Through the next 25 years of medical research, numerous articles,[220] from 1963 through 1988, have been published describing this condition, but none have offered any specific treatment program to those individuals afflicted with the disease. Generally speaking, it is agreed that Nemaline Myopathy is an autosomal dominant congenital disorder that has a predominance of type 1 muscle fibers occurring in its victims. Moreover, the muscles of this particular congenital myopathy have an abnormally high number of rod-like structures in them.

Those suffering from the disorder usually have such dysmorphic features as an elongated face and a narrow as well as very high arched palate. At birth, infants often have sucking and swallowing weakness and therefore suffer feeding difficulties. Also, due to weak intercostal muscles and a corresponding inability to properly handle pharyngeal secretions, patients more often than not have recurring attacks of viral as well as bacterial aspiration pneumonia. Within the first year of life, death can occur and is largely a result of respira-tional failure associated with these continued bouts of pneumonia.

If the infant does weather through the first very demanding year of life, he/she is usually much more susceptible to upper respiratory infections than the normal child and has moderate to severe skeletal muscle weakness that affects the proximal muscles of the upper and lower limbs more than the distal ones. Their bodies are usually more slender than normal children; this is the result of a general diminution of muscle bulk. In some cases, muscles innervated by cranial nerves become involved in the disease process, particularly facial musculature and the muscles of mastication.

As previously mentioned, as of 1988 there has not been any definitive treatment offered by the medical community for those individuals suffering from congenital nonprogressive Nemaline Myopathy. The purpose of this discussion, therefore, is to give a specific and successful treatment plan for this particular "orphan disease". Since "necessity is often the mother of invention", the author, as well as his 7 year old son, both of whom have been diagnosed as having congenital nonprogressive Nemaline Myopathy, had no choice but to experiment on their own, especially since no concrete answers were ever offered to them by vast numbers of physicians who came in contact with them through the years.

My name is Dwight Kalita and my son is Brian. Both of us almost died of aspiration pneumonia within the first year of our individual lives. Both of us have elongated faces, high arched palates, slender figures with small muscle bulk, and proximal upper and lower limb weakness. We both were unable to breast feed due to sucking weakness, and both had as infants swallowing weakness which made eating difficult to impossible. In spite of my physical handicap, I have, as a Ph.D., co-authored four medical books with various physicians, and currently am President of my family owned 3 million dollar computer printer business. My son, who is one of the youngest licensed amateur radio operators in this country, plays the electronic organ, enjoys working on computers and cub scouting with his friends, and despite his congenital disease loves school work and friends, his family, and — most importantly — himself.

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One of the major reasons for our mutual success is that over forty years ago my parents began looking for answers that they could not find in the hospitals, answers that would offer a treatment which significantly lessened the physical as well as mental ravages of a muscle disease that had at that time not even been defined. My story begins in 1947 at the Henry Ford Hospital in Detroit, Michigan. I had just been rushed there by ambulance traveling over 120 miles because I was "gasping for my last breath". Two days earlier, I was given the pertussis vaccine and within 24 hours, my parents were pulling "ropes of thick mucous" from my mouth, I was coughing nonstop, and literally gasping for each precious breath of life. Luckily, my life was saved but this was not my last hospital visit. The next ten years were plagued by continual viral/bacterial bronchitis, pneumonia, and general poor health, accompanied by rather severe proximal muscle weakness of both upper and lower limbs, hypotonia, prolapsed rectum, poor weight gain and a chronic over abundance of pharyngeal secretions.

In 1958, five years before Shy discovered Nemaline Myopathy as a specific class of muscle disorder, something happened to dramatically alter the rest of my life! My parents, along with the Chief of Pediatrics at the Henry Ford Hospital decided to try an experiment with the amino acid: Tyrosine. I was given 500 mgs of Tyrosine once a day in the fall of 1958 in an attempt to help my ragweed allergy. Tyrosine is a precursor to the production of adrenaline and thyroxine. Unfortunately, this particular amino acid which is commonly found in most protein foods did nothing to help my allergic responses, but what it did do to some of my muscle-related problems was nothing short of miraculous.

Within 48 hours after taking Tyrosine, I had what was considered to be a 25% improvement in muscle strength throughout my body! My prolapsed rectum, which had been a source of discomfort all the first 11 years of my life, normalized. My chronic pharyngeal secretions disappeared, and I was able to to swallow my food much easier. Since my appetite dramatically increased, I began gaining weight much like that of a normal child. Moreover, I
was able to walk with a much stronger gait and even began to "run" (or walk fast), though still with some difficulty. Since that date, I have never had another bout of bronchitis or pneumonia, and in fact, have not even had to take any antibiotics for at least the last 15 years. Indeed, my general stamina and ability to handle physical and emotional stress improved significantly. But what was even more surprising to my school teachers was the fact that they documented a 20 point rise in my IQ after Tyrosine was introduced.

After being on the amino acid, Tyrosine, for a few years, my parents and family physician decided to try a placebo test for a couple of weeks. Within about 10 days of not taking Tyrosine, all of my old muscle weaknesses and associated problems began slowly coming back; since I knew nothing about their test, I asked my parents one day why I was feeling so weak. They immediately put me back on Tyrosine and my strength returned to normal within a day or two. Other similar tests run through the years gave the same results as the first placebo test.

When I entered college, my family and I became very interested in nutritional science. A well balanced supplement program of vitamins, minerals, and amino acids, as well as a diet rich in fresh fruits, vegetables, raw nuts and seeds and low in sugar and junk foods, was introduced at that time. These new nutritional factors seemed to offer me even more resistance to infection and further increased my stamina during those stress years of study and thereafter. But in spite of all the other nutritional factors I have added through the years, I have never been able to discontinue Tyrosine. Even at my current age of forty, I tried once again to eliminate Tyrosine, but after about a week I began feeling the terrible weakness in my muscles that I once knew. I decided then that I was hooked on the amino acid for the rest of my life.

But my story doesn't end here. At the age of twenty-nine I got married, and my wife Bonnie and I had our first son, Brian, three years later. At that time I had still not been diagnosed as having Nemaline Myopathy, since I never felt the need to get a specific name associated with my particular muscle

problem. In my early twenties, several neurologists advised my to have a muscle biopsy so they could accurately classify my disease. But when they also informed me that even though they could name the disease, they more than likely could offer nothing in the way of specific treatment, I failed to see the necessity for the biopsy. For at that time in my life, my muscle disease was nothing more than a minor inconvenience, especially since Tyrosine and all the other nutritional factors had helped me so significantly.

Brian's birth was a normal event, and we went home thinking we had a normal and healthy child. Why should we think otherwise, especially after our new pediatrician, who had been told of my "muscle weakness problem", had announced it so. But trouble didn't take long to raise its ugly face. Within a couple of weeks we noticed that our new infant seemed to want to sleep almost all the time. He was nursing often but did not seem to be gaining any weight. In fact, he began losing weight at an alarming rate. Upon seeing our pediatrician, I asked him three times whether there was any possibility of a connection with Brian's current problems and my unnamed congenital muscle weakness. He assured me that there was not, and suggested that my wife, in order to be more successful at nursing, needed to "relax more". He had seen the "anxious mother" many times in his practice before, particularly with the first born child. His treatment offered, therefore, was a glass or two of wine for Bonnie once or twice a day. As I look back now, that was one hell of a prescription for the treatment of a child with the neuromuscular disease Nemaline Myopathy.

Needless to say, the wine didn't work! We switched pediatricians and Brian was immediately put on bottled formula, which was much easier for him to suck on. He began to thrive and for about a month or so we enjoyed our new baby without any problems. We were again told by this new doctor that there was no problem with Brian's muscle strength. But then Brian very slowly developed a "rattle" in his upper throat that never went away. He began coughing while drinking his formula, and then, oh so very suddenly, he became deathly sick. I still remember the horror of the words spoken to me by the doctor: double pneumonia! We were informed that the local hospital was not equipped to handle the severity of Brian's illness. He was flown sixty miles by helicopter to a special respiratory center in a larger city hospital. History seemed to be tragically repeating itself some thirty two years later, only instead of driving 120 miles in an ambulance, Brian had the convenience of flying half that distance in a helicopter. But the ugly circumstances necessitating the emergency travel plans were all too familiar!

The historical performance of the physicians in charge was also a repeat performance. Brian's life was saved by antibiotics, just like mine was thirty-two years before, but even though the life threatening secondary problem, i.e., infection, had been successfully treated, the primary cause, i.e., Nemaline Myopathy, of the secondary problem was not to be treated in either of the hospitals. That's right, even though I suggested to four different doctors that Brian be immediately put on Tyrosine, they would not allow my "magic formula" in the hospital. They said that only "American made products" were used in their hospital, and since Tyrosine was a Japanese product, I was simply out of luck. After hearing this type of parochial thinking, I attempted to take Brian home, but was met by the county sheriff with his gun and a court order to bring him back to the hospital immediately. Accordingly, after a four week stay at this hospital, Brian was transferred to an even larger city's Children's Hospital where the diagnosis of Nemaline Myopathy was finally given. Upon arriving at this Children's Hospital, Brian was again diagnosed as having double pneumonia — the second time within one month! Again, antibiotics miraculously saved his life, but we were sent home after 6 weeks in three different hospitals and |18,000 worth of testing and hospital expenses with a "poor prognosis" and *no treatment* for the primary problem of a neuromuscular disease. But that's OK the doctors said, we now had a *diagnosis* of Nemaline Myopathy (which seemed to satisfy them but not me). So we could now go home without fearing that we would be

again met at our doorsteps by the sheriff, his gun and another court order to come back to the hospital. Do you now understand why I previously said that from a patient's point of view, "necessity is often the mother of invention"?

The doctors sent us home with tube feedings of formula through the nose, since Brian was too weak to eat any food or drink his formula. He couldn't even hold his head up after the debilitation of two pneumonias and six weeks of medical testing. Needless to say, I immediately started him on 250 mgs Tyrosine the minute Bonnie and I got home. If your own personal religion affords you the beauty of believing in miracles, you will understand what my wife, father, mother, father-in-law, mother-in-law and I all beheld in little Brian during the next three days.

Within forty-eight hours, Brian was eating baby food. This was miracle enough for Bonnie and me, because all the doctors recommended that Brian have a hole put in his stomach and be fed through a tube. This advice, was of course, ignored. But the miracles didn't stop here. Brian's muscle strength through the next week steadily increased. He began sitting up, holding his head erectly, laughing, and even began to crawl around a little bit. His pharyngeal secretions disappeared slowly but surely, and his appetite was nothing less than phenomenal.

Brian began gaining weight rapidly and the subsequent years of his life were a joy to behold. He actually began walking while holding onto furniture and loved to ride his little "Bucky" play horse. Seven years later, Brian is such a normal "all American boy" that he now loves to play baseball with his friends, even though, sometimes one of the other boys runs the bases for him after he hits the ball. They help him because, as he puts it, he is "just a little too slow running the bases".

Brian's increased muscle strength and general well-being, like mine, depends on his daily intake of Tyrosine. For sure, his and my muscle strength are not to be considered normal, but it's a far cry from what it could be without our miracle amino acid. And what is more important is that Brian, like any other child will
occasionally get a cold, but he now has the strength to fight the infection. He is currently seven years old and since he has been on Tyrosine, he has never again had pneumonia. In short, his severe life threatening respiratory illnesses (i.e., those illnesses which have killed other children with Nemaline Myopathy), like mine, have literally ceased to be.

To be sure, more clinical research into the relationship of Tyrosine and Nemaline Myopathy needs to be done. This paper merely describes in an anecdotal fashion two similar and rather dramatic case histories within one single family. Since Tyrosine is a precursor to the production of thyroxin as well as epinephrine, a good place to begin this research might be with a more in-depth examination of other individual patient's thyroid and adrenal glands. What obviously helped two individuals with Nemaline Myopathy just might also dramatically change the lives of others similarly afflicted. Without a doubt, the amino acid Tyrosine is not to be considered as a "cure" for Nemaline Myopathy. But it does offer at least one pragmatic as well as safe means to better cope with the debilitating effects of the disease. Moreover, it offers hope to those patients that, up to now, have been given very little concrete therapeutic help of any kind from the medical profession.

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