

Parent Personal Statements of their Observations From the UCSD Suramin Treatment Trial

Blinded Comments, September 13, 2016

Subject #1

Can you imagine being the parent of one of the locked-in patients in the movie *Awakenings*? Our son is 11 years old. At 1.5 years old he knew his colors, shapes & numbers in English, Spanish and Farsi. He could put puzzles together faster than anyone at his age. He was social and engaged others. By 3-years old all of that language and communication was lost and he was diagnosed with Autism.

As two physicians we have tried a lot of treatments and therapies. When he started in the UCSD clinical trial of Suramin, he could speak in short 2-3 word sentences and sentence fragments. He had a nasal voice that sounded “pitchy”, and was prone to echoing other people’s words and getting hyper and over-excited, running to and fro while making “stim” movements with his hands, in any social setting. The doctors told us his expressive language was at 3 years, and his receptive language was at 4 years of age.

Within an hour after the suramin infusion, the nasal quality to his voice disappeared. This stayed normal sounding for more than 3 weeks. The first night after the infusion, a new calmness was apparent. This was not a sedative effect, but rather he seemed happier and more at ease in his own skin.

The first night, after eating all his dinner, he calmly looked up at me and said, “I finished my dinner”. He had never said this before. Usually he would say, “I did it” when he finished his dinner. Two days after the infusion, at his follow-up visit to the infusion center he said clearly to the nurse, “I want to go to the bathroom again.” This was probably the longest sentence of his life. Six days after the infusion he started asking to try new and different foods. He ate lettuce! This was a big change because he is usually a very picky eater. His appetite in general was excellent after the infusion. He started being much more interested in social contact, making and holding eye contact with his therapist for long periods of time, and even tried to get her to laugh at a new game he was inventing—He actually tried to make someone else laugh!

We noticed a new engagement and focus in trying new things. He learned to count from 100 to 200 for the first time. We noticed much new language and spontaneous use of normal full sentences to express his needs and wants. For example, when my husband was starting to leave on a trip out of town, my son wrapped his arms around him and said, “Today, I only want to be with you.” By about 5 weeks after the infusion, most of these changes had gone back the way he was before.

We have been working hard, trying every new treatment for autism that seemed reasonable for the past 8 years. Nothing has come close to the effects we saw from Suramin. Just one dose of suramin gave us a glimpse of that child who was locked in by his disease. We got to see that 1.5-year old little boy, with all that life and joy and

smarts who is still in there, and with the right medicine can come out and continue to learn again.

So can you imagine being the parent of that locked-in patient in the movie *Awakenings*? When the patients finally wake up, and smile and dance. But then it's all taken away?

Subject #2

Our son is 5 years old. He was diagnosed with autism at age 3 ½ years. He could speak in 4-8 word sentences before the suramin trial. He never initiated conversations and never asked about the feelings of others. He had many special interests and lived most of the day in his own world, without interacting with other children. He loved all things with circles in them like Cheerios, wheels, and balls. He also loves to construct colorful numbers with Play-doh. Immediately after the infusion, a kind of inner cheerfulness started to come out. When we were walking back to the car, he was holding me hand. He started giggling and looked up at me and said, "I just don't know why I'm so happy." On weekends when we took him to a neighborhood park before the infusion, he would sit off to the side of the playground doing his own thing. After the infusion, new social skills and language started bursting out. He started joining in to games of tag. At school, he started imitating the other kids playing chase and tag on the playground. He did this awkwardly at first because he didn't really know the social rules of the game. Sometimes he was too eager to join in and the other kids didn't understand his new interest in playing. This led to some tears on the playground until our son could learn the rules of playing with the other kids. This was all so new for him. In big family gatherings, he had a new tolerance when other kids wanted to share his Play-doh and other special toys. In the past, this would have led to a meltdown. After suramin, that didn't happen and he played much more naturally with the other kids. The effect of suramin on his language was really amazing to us. The length and complexity of his sentences seemed to almost triple from what it was before suramin. Not only did he start talking about what was going on around him, but he was able to tell me about things that happened at school during his day for the first time ever. This is something that I have always wanted to be able to do, to talk to my son about his day. There were times when he was so focused and eager to try new games or do new things that he was hyper with excitement, and on several days he was getting up early in the morning to start new activities he was becoming interested in.

After suramin, he had a new ability to cope with adverse situations. Once when a new BB8 Christmas ornament shattered on the floor, he didn't even cry and was easily comforted and engaged in another activity. 7 weeks after the infusion I got a call from his kindergarten teacher. She called to tell me about a remarkable thing. Our son was sitting at a project table with 5 other children. He asked one of the boys, "What are you making?" and had a back and forth conversation for the first time in his life. He asked one of the girls, "What is your favorite color?" and had a two-way conversation with her. These were completely new behaviors that he had never done before. In general, throughout the study, therapists, family, and friends commented on his increased language and desire for more social interaction. Suramin produced the most dramatic improvement in autism symptoms that we have ever seen with anything we have tried.

Subject #3

Our son is 14 years old. His early development was advanced. He spoke in complete sentences to his older brother and sister at 2 years of age. He liked listening to music and had a favorite folk singer that he liked to listen to. A little after his 2nd birthday he began to regress and lost all his language. He was diagnosed with autism when he was 3 years old. At the time of the suramin study, he could only make some sounds, and some hard to understand single, compressed and almost-whispered single words. The doctors told us that his expressive language was below about 2 ½ years old, although his receptive language was better. He had not spoken a complete sentence in almost 12 years.

After the infusion, we witnessed a remarkable change. Within an hour after the infusion he started to make more eye contact with the doctor and nurses in the room. There was a new calmness at times, but also more emotion at other times. He started to show an interest in playing hide-and-go-seek with his 16-year old brother. He started practicing making new sounds around the house. He started seeking out his dad more. On a Saturday about a week after the infusion, his dad was making a snack in the kitchen. My son went in and said very clearly the first sentence of his life. He looked at his dad and said, "*I want to eat chips.*" His appetite improved and he started asking to try new foods. By 3 weeks after the infusion, he was starting to show tender emotions that were so endearing. He started to sit quietly on the couch with his dad while watching TV and to gently, almost unconsciously, touch or tap his father tenderly. Before the suramin, our family dog, a little Chihuahua stayed away from our son. Afterward, our little dog would spend hours on the couch sitting quietly next to our son as he worked on one of his new interests, computers and the internet. Before suramin, our son never touched a computer or showed any interest in music. After suramin he had an explosion of new interests. He started asking to try new foods. He started using the family laptop computer. He learned how to surf the internet. He discovered youtube. By the 4th week after suramin he had surfed through youtube and found the very same folk singer that he used to listen to as a child 12 years ago before his regression. This was really amazing to think that he remembered this from so long ago. He played chase and tag with his older brother regularly. He had never done this before. Soon they were inventing games of catch with each other. New behaviors and new language was apparent almost every day. By about 5 weeks after the suramin he started returning to being more closed in. He stopped asking for new foods, and by 6 weeks afterwards, he was no longer using the computer or listening to new music.

We saw improvements in our son after suramin that we have never seen before. We have tried every new treatment out there for over 10 years. Nothing has come close to all the changes in language and social interaction and new interests that we saw after suramin. We saw our son advance almost 3 years in development in just 6 weeks after suramin. We want to see now if a few doses of suramin over a few months might help him even more.

Subject #4

Our son is 6 years old. His early development was normal. He had several words and to us appeared to be doing great until he was almost 2. At 22 months of age, he gradually stopped talking over a few weeks. He soon did not respond to his own name. In a few more weeks he regressed socially. He was diagnosed with autism at 2 years of age. Before suramin he could only make a few sounds and a few, poorly-enunciated, whispered words. He had never spoken a complete sentence.

On the day of the suramin treatment he was very anxious and upset. He strongly resisted the IV placement and didn't make eye contact with any of the doctors or nurses in the room. Within an hour after the infusion he seemed calmer. He made eye contact with the doctor. At home, he started making new sounds in the first week, almost as if he was practicing. He started seeking out new social interactions both with adults and other children. He actually hugged another child of a family friend during a visit in the first week, this was the first time he had ever done this, and it just blew us away. In the second week after suramin he said the first sentence of his life. We were sitting down watching TV as a family and our son clearly said, "I want to have a drink". Before, if pushed he might say 'drink' or 'drinky'. My wife and I, and especially our oldest child were amazed.

Over the month after suramin he changed his food choices. He used to eat a lot of salad. After suramin, he seemed to crave more protein, and didn't want to eat salad. His therapists and teacher all commented that he was more on task at school. In fact, his teachers at school were unaware of the trial and one day we got a note from the teacher asking about what we had changed. We were naturally concerned and when we asked they told us that *'He has completed 3 weeks of schooling in 3 days!'* He learned to read new words like "the", "one", "are", and "and" and to pronounce them well for the first time in his life. The initial calmness and focus and interest in new social interactions stayed with him for at least a month, then gradually went away.

While every parent is looking for an answer to autism, we clearly saw that suramin provided major benefits for our son. At first we thought maybe our desire to see improvements was so strong we were seeing them but they might not really be there. So to have the school's independent feedback on his progress during the treatment, and our family friends seeing the new social interaction, as well as his older brother's amazement at our son's first sentence, we knew it wasn't just in our heads. Suramin is the most significant breakthrough in autism treatment for our son that we have ever seen.

Subject #5

Our son is 7 years old. We noticed his language was delayed at 2 ½ years old. There was no regression. By 3 ½ years of age, he was diagnosed with autism. Before the infusion, he could speak some sentences of perhaps 4-5 words in length. He would often echo phrases spoken by others many times. He was very anxious in crowds. After the infusion the nasal quality in his voice disappeared. His anxiety seemed to disappear too. He became calmer, almost cheerful. On the way out from the infusion center he waved to all the staff and said loudly and clearly to all the nurses, "See you later!" I normally take him to school each day and walk with him to class. There is a crosswalk with an older lady who is the crossing guard. Before suramin, our son would always turn his eyes away from the crossing guard lady as we walked across. In the first week after suramin, he stopped me as we got out of the car and told me clearly, "Today, I want to say 'hi' to the crossing guard lady." This was amazing both because it was one of his longest sentences ever, but also because it expressed a new openness to be more social. His overall eye contact with us at home was much improved. Before suramin he would only make eye contact with us about 10% of the time. After suramin, he would search us out and hold eye contact while talking or interacting with us for long periods of time. He took up an interest in music and dance and started to wiggle and dance around his room listening to youtube videos. When my husband left for work, my son started to say "Goodbye dad" for the first time. He got interested in the family cat for the first time, talking to the cat throughout the day. He started observing me talk on the phone more. He invented a new game finding it fun to try to guess who I was talking to, saying for example after I hung up, "That was Granny." In the 2nd week after suramin, his appetite started to increase. He started asking to try many new foods. In the 3rd week, his fine motor skills started to improve to the point that he learned how to tie his shoelaces and to zipper his jacket for school for the first time ever. We had been working on these skills for over a year without success until he got the suramin. Throughout the month he was having lots of new social interactions with adults and with pets, but had not been doing much with classmates at school. He teachers noted that he started saying "Hi" to other kids in class, but that was all in the first month. In the 7th week after treatment, he did something he had never done before. He initiated a back and forth conversation with another child who was visiting our home. This was completely new and a real breakthrough. Most of these changes gradually returned to the way they were before treatment over the next few weeks. He is still able to tie his shoelaces, although this seems a little harder for him now than in the month after suramin. We saw lots of positive changes after treatment and are looking forward to being part of the next trial.

Observations of the Parents of Children who Received Placebo

(Blinded comments)

Subject #6

Box checked: "No significant changes" at both the 3 week and 6 week time points. No comments were added.

Subject #7

Box checked: "No significant changes" at both the 3 week and 6 week time points. No comments were added.

Subject #8

Calm, no crying on infusion day. Decreased stereotypy and improved calm for 3-4 days after the infusion. No changes noted after that.

Checked the "No significant changes" at both the 3-week and 6-week time points.

[Dr. Naviaux Comment: This child was found to have an elevated white blood cell count of 12,200 on the day of infusion and was working on recovering from an upper respiratory tract infection. Transient improvements in ASD symptoms have been seen in up to 80% of children in association with fever or infection. These symptoms return to baseline as the infection is cleared.]

Subject #9

No changes noted for the first 5 weeks. There was significant parental tension in the home around differences of opinion regarding Western vs Chinese medical approaches to care. Mom left on a trip to China after 5 weeks. Dad described transient improvements in irritability and tantrums in the 6th week, but still checked the "No significant changes" box at both the 3-week and 6-week time points.

Subject #10

Decreased stims and fewer and shorter duration meltdowns in the first week after the infusion. No changes noted after that.

Checked the "No significant changes" box at both the 3-week and 6-week time points.