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Table of Contents

Autism and Glutathione

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Dan Murphy graduated magna cum laude from Western States Chiropractic College in 1978, and has more than 20 years of practice experience. He received Diplomat status in Chiropractic Orthopedics in 1986. Since 1982, Dr. Murphy has served part-time as undergraduate faculty at Life Chiropractic College West, currently teaching classes to seniors in the management of spinal disorders.

Dr. Murphy is on the post-graduate faculty of several chiropractic colleges. His post-graduate continuing education classes include “Whiplash and Spinal Trauma” and “Pain Neurology.” Dr. Murphy is the coordinator of a year-long certification program in “Chiropractic Spinal Trauma,” now (2000) in its twelfth year of being offered. This year, the program is being offered through the International Chiropractors Association of California. He has taught more than 700 post-graduate continuing education seminars.

Dr. Murphy is a contributing author to the book Motor Vehicle Collision Injuries, published by Aspen, 1996; and to the book Pediatric Chiropractic, published by Williams & Wilkins, 1998. He writes a quarterly column in the Journal of Clinical Chiropractic.

In 1987, 1991 and 1995 Dr. Murphy received the Post-graduate Educator of the Year award, given by the International Chiropractic Association. In 1997, he received The Carl S. Cleveland, Jr., Educator of the Year award, given by the International Chiropractic Association of California.

Although controversial and poorly covered by the media, dozens of well-respected scientific journals have published articles relating the mercury in vaccines to the epidemic of autism. I have listed six such articles in my references for this article.1, 2, 3, 4, 5, 6 As an example, reference6, published in the October 2005 issue of the journal Neuroendrocrinology Letters lists 83 references. These articles assert that the first case of autism was noted in 1943, that now one in every 150-166 children in the US are autistic, and that one in every six US children have a learning disability. These statistics are enough to financially break every public school system in the US as officials struggle to provide these children with an education.

I believe that a potential breakthrough in the understanding of the etiology of autism occurred in 2003. Published in the International Journal of Toxicology,7 researchers noted that hair analysis of autistic children showed a very significant reduction of mercury as compared to the hair analysis of normal children. The authors suggested that this could mean that normal children are efficient at removing mercury through mechanisms that include hair growth; in contrast, autistic children have a reduced ability to remove mercury from their bodies, increasing neurological damage.

The following year, 2004, researchers from the Department of Genetics at Arkansas Children's Hospital in Little Rock8 noted that autistic children have reduced levels of the detoxifying antioxidant glutathione as compared to normal control children. The work of the lead researcher, S. Jill James was reviewed in Science News, April 16, 2005, noting the following9: Biochemistry Blood Hints at Autism's Source Researchers have identified a biochemical peculiarity in the blood of autistic children.

"The incidence of autism has gone up dramatically in the last 15 years," notes S. Jill James, director of biochemical genetics at Arkansas Children's Hospital in Little Rock. "Because gene don't change that fast, this points to something in the environment as a trigger," she says.

James found an unusual biochemical fingerprint in the blood of 100% of 75 autistic kids, while none of 75 normal kids had the biochemical marker.

"The autistic youngsters had unusually low concentrations of the antioxidant glutathione in their cells."

"This pattern is consistent with an inability to detoxify poisons, especially heavy metals, such as mercury or lead," James says. "That's because the antioxidant normally binds to heavy metals, and the body then targets the molecular complex for elimination."

James suspects that autism develops under the combined effect of genetic mutations that deplete glutathione and exposure of a child to heavy metals or other poisons.

"One of the most controversial theories about autism is that vaccines preserved with the mercury-containing chemical thimerosal can cause the condition."

"Dietary treatments could boost glutathione in children carrying the genes that reduce the antioxidant," says James.

These two findings, (reduced hair mercury and reduced glutathione) appeared to be coupled; reduced levels of glutathione would reduce the ability to target and remove mercury (and other toxins) through hair growth and increase the incidence of neurological damage and autism.

Glutathione is a peptide containing the amino acids:
GLUTAMATE—CYSTEINE—GLYCINE

Three amino acids connected together means that glutathione is a peptide (small protein), which means it is coded for by a gene in our DNA. According to the work by Dr. James above, the expression of the gene that produces the peptide glutathione is a biological variable, different in everyone. Reduced expression of the glutathione gene becomes biologically important in an environment that is increasingly toxic, because those so afflicted cannot properly detoxify metals (like mercury) and other toxins. The results are low hair mercury levels and increased neurological damage, including autism.

The biochemical importance of glutathione is reviewed in the 2002 book by Jimmy Gutman, MD10 titled, Glutathione, Your Body's Most Powerful Protector. Dr. Gutman points out that glutathione is not only our body's most powerful detoxifier of mercury and other toxins (including drugs like Tylenol/ acetaminophen), but it is also the most important molecule in our anti-oxidant network that protects us from the dangers of free radicals.

Two studies published in 20053,6 and one study in 20064 support the vaccine-mercury-autism-glutathione model. The 2005 article published in the journal Medical Science Monitor (A two-phased population epidemiological study of the safety of thimerosal-containing vaccines: a follow-up analysis) makes the following points:

1) Thimerosal is a mercury-containing preservative in vaccines.

2) Vaccinated children received doses of mercury from thimerosal-containing vaccines that are in excess of government safety guidelines.

3) Exposure to mercury from thimerosal-containing vaccines is a consistent, significant risk factor for the development of neurodevelopmental disorders.

4) "The United States is in the midst of an epidemic of neurodevelopmental disorders."

5) One in 166 US children have an autistic disorder.

6) One in six US children have a developmental and/or behavior disorder.

7) Autism, once rare, is now more prevalent than childhood cancer, diabetes and Down Syndrome.

8) Thimerosal is recognized as a developmental toxin that can cause birth defects, low birth weight, biological dysfunctions, and psychological or behavior deficits that manifest as the child grows.

9) Thimerosal is still routinely added to several vaccines given to US children and pregnant women, including influenza, Tetanus-diphtheria, and meningitis.

10) As the Centers for Disease Control and Prevention (CDC) have expanded childhood immunizations, there has been an increase in neurodevelopmental disorders in the United States.

11) If US infants received all of the recommended thimerosal-containing vaccines, they could have been exposed to 237.5 µg of mercury by 18 months of age, and even more if they also received flu vaccinations.

12) There is a linear correlation between the amount of mercury children receive from thimerosal-containing vaccines and the prevalence of autism.

13) Vaccines also contain formaldehyde, aluminum, and gelatin [a source of glutamate].

14) This study showed a significant association between thimerosal-containing DTP vaccines and neurodevelopmental disorders, including an 80% increased risk for autism, an 160% increased risk for speech disorders, a 220% increased risk for mental retardation, a 130% increased risk for personality disorders, and a 370% increased risk for thinking abnormalities.

15) Other sources of mercury include anti-Rho immune globulin, seafood, manufacturing plant emissions, dental amalgams, and other pharmaceuticals.

16) This study shows “strong evidence of a relationship between the administration of thimerosal-containing childhood vaccines in the United States and neurodevelopmental disorders.”

17) The studies that claim thimerosal-containing vaccines are safe are bogus because they are done in Europe where the vaccinations contain only 1/3rd of the mercury used in US vaccinations, and they are administered over a longer period of time. Therefore, these studies are not comparable to what is being done in the US.

18) The hair of autistic babies is very low in mercury because these babies have very low levels of the antioxidant/detoxifier glutathione. Glutathione is crucial for mercury excretion, as it attaches to toxic metals so that it can be eliminated through a number of mechanisms, including through hair growth.

19) The neurotoxicity of thimerosal is associated with glutathione depletion.

20) Studies alleging that mercury in vaccines is safe are mistaken.

21) Thimerosal should be removed from all vaccines.

The 2005 article6 published in the journal Neuroendocrinology Letters (Mercury and autism: accelerating evidence?) makes the following points:

1) Genetic and environmental risk factors seem to be involved in the development of autism and neurodevelopmental disorders.

2) The increase in autism in the last decades parallels cumulative mercury exposure.

3) Autistic children have higher mercury exposure during pregnancy due to maternal dental amalgam and thimerosal-containing immunoglobulin shots.

4) Children with autism have a decreased detoxification capacity due to reduced genetic production of glutathione.

5) Glutathione is both an important anti-oxidative and detoxifying agent.

6) Autistic children have significantly decreased levels of glutathione.

7) “Promising treatments of autism involve detoxification of mercury, and supplementation of deficient [glutathione] metabolites.”

The 2006 article4 published in the Journal of American Physicians and Surgeons (Early Downward Trends in Neurodevelopmental Disorders Following Removal of Thimerosal-Containing Vaccines) makes the following points:

1) “In 2004, the Department of Health and Human Services and the American Academy of Pediatrics issued an Autism A.L.A.R.M., stating that one in 166 children currently have an autistic disorder, and one in six children have a developmental and/or behavioral disorder.” [Incredible]

2) The current epidemic in neurodevelopmental disorders is not due to immigration or a changed diagnostic criteria.

3) Thimerosal is a mercury-containing compound that was added to many vaccines as a preservative, it crosses the blood-brain barrier and results in appreciable mercury content in the brain.

4) Small concentrations of thimerosal can induce neuronal death, neurodegeneration, membrane damage, and DNA damage within hours of exposure.

5) The U.S. Centers for Disease Control and Prevention increased the number of thimerosal-containing vaccines to be given to US children from the early 1980s to 1999. This increased infant mercury exposure from 100 µg to 275 µg in the first 18 months of a child's life.

6) The incidence of neurodevelopmental disorders is US children increased 2 to 8 fold during this period of time, paralleling the increase in mercury exposure from thimerosal-containing vaccines.

7) On July 7, 1999, both the American Academy of Pediatrics and the US Public Health Service recommended the removal of thimerosal from vaccines.

8) Thimerosal was reduced in the vaccines given to US children from 1999 through 2003.

9) This reduction of thimerosal-containing vaccines given to US children resulted in a significant 35% decrease in Autism and neurodevelopmental disorders in US children.

10) Neurodevelopmental disorder rates correspond directly to the cumulative mercury dose to which children were exposed from thimerosal-containing vaccines through the US immunization schedule.

11) "An infant who received all of these vaccines on schedule could have received as much as 200 micrograms (µg) of mercury during the first 6 months of life."

12) Today, thimerosal is still routinely added to some formulations of influenza vaccine and to the tetanus-diphtheria and monovalent tetanus vaccines.

13) "Examinations of the Vaccine Adverse Event Reporting System, the U.S. Department of Education, and the Vaccine Safety Datalink databases show significant links between exposure to thimerosal-containing vaccines and neurodevelopmental disorders."

14) Breast-fed babies who received all recommended vaccines exceeded the mercury safety guidelines established by the US Environmental Protection Agency, Health Canada, the World Health Organization, the Agency for Toxic Substances Disease Registry, and the US Food and Drug Administration (FDA).

15) This study shows that "very specific neurodevelopmental disorders are associated with thimerosal-containing vaccines."

16) Autistic children have a significant decrease in the plasma concentration of glutathione.

17) Autistic children have significantly increased oxidative stress in comparison to control children. This is relevant because glutathione is our body's most powerful antioxidant that reduces oxidative stress.

18) Glutathione is a necessary metabolite for the excretion of mercury from the body.

19) This means that low levels of glutathione in Autistic children will give their bodies a larger mercury burden, increasing neurodevelopmental disorders and oxidative stress.

Two of the articles6, 9 reviewed here suggest there is a potential for the prevention and treatment of glutathione deficient autistic and neurodevelopmental disorder children by using dietary strategies. Oral supplementation with the glutathione peptide does not elevate the body's glutathione levels and is therefore an inadequate strategy. Approaches that do elevate glutathione levels include:

1) Again, glutathione is a peptide consisting of the amino acids
Glutamate—-Cysteine—-Glycine
The rate-limiting factor in glutathione production is the amino acid cysteine. Oral supplementation with a specific form of cysteine will definitely elevate the body's levels of glutathione, and has proven detoxification and anti-oxidant benefits. The specific form of cysteine that elevates glutathione levels is N-Acetyl Cysteine, or NAC.

2) A second approach to elevate the levels of glutathione involves supplementation with vitamins B6, B12, and folic acid. These vitamins accelerate the conversion of the non-protein amino acid homocysteine to cysteine. Recall that elevated homocysteine is a significant biological marker for cardiovascular risk,11 and the cardiovascular risk is reduced with vitamin B6, B12, and folic acid supplementation. In fact, elevated levels of homocysteine is potentially the best biological marker for vascular event risk as a consequence of chiropractic adjusting.12 Consequently, taking these B vitamins not only elevates levels of the detoxifying anti-oxidant

glutathione, they do so by reducing levels of homocysteine, an amino acid that makes our vascular system frail.

3) Supplement with 10 - 30 grams per day of undenatured whey protein. According to Dr. Gutman,10 consuming undenatured whey protein is the single best way to elevate glutathione levels. Dr. Gutman stresses that the whey protein must be "undenatured" which is a special process that protects the fragility of the molecules. Only undenatured whey elevates glutathione levels. The product must also be protected by not heating it or agitating it with a blender, or it will not elevate glutathione levels.

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Commentary by Dr. Corinne Allen

This article gives good scientific evidence of the research documenting the need for glutathione supplementation in all neurological disorders and especially autism. It correctly states that," **Oral supplementation with the glutathione peptide does not elevate the body's glutathione levels and is therefore an inadequate strategy".** Even the denatured whey protein is not a strong source of this essential nutrient glutathione. It is difficult to administer this product because it must be mixed with something and cannot be put into a blender. It doesn't provide a high quality of glutathione in the continuous and high dosages that are needed by the normal person, let alone the neurologically challenged person.

Glutathione hooks onto poisons like heavy metals, organic solvents, pesticides, additives, and chemicals in our foods, radiation, etc. any toxins we get in the things we touch, breathe, or eat.

Dr. Robert Keller has discovered a way to overcome the oral ingestion and absorption problem. Though ten years of research he has discovered a way to get the liver to produce this much needed nutrient, **glutathione.** The technology is so unique that it has one of the few compound patents on it.

Dr Keller's breakthrough technology is available in a capsule form called MaxGXL. What does MaxGXL do? This product is so unique that it doesn't just **get glutathione into the cells** but it **also helps the body recycle glutathione** so it can be used over and over again.

1.It promotes the absorption of the things that the body uses to create glutathione.

2.It gives the body what it needs to produce glutathione (without being destroyed in the stomach), thereby promoting the release of the toxins in the cells of the body.

3.It allows the body to recycle the glutathione so it can be used over and over again.

4. When glutathione is used in oxidation, burning, or free radicals there will be inflammation. Maxgxl is able to stop this reaction. It takes out the one major problem in terms of glutathione. The oxidation, burning and free radicals all lead to inflammation and inflammation is what can cause you to age prematurely Inflammation is associated with every disease of aging.

5. It contains cordyceps, which reduces inflammation and therefore protects the substances that are used in MaxGXL for the production of glutathione inside of the cells.

6. It's a unique and complete supplement, and in that way it is very different from anything else that's on the market.

7. MaxGXL is a product for our time because we are no longer able to live without high levels of toxicity even if we eat pure food, and take good supplements, and think pure thoughts. The fact is that we cannot control the overspray from the farmer next door on the organic crops that end up in our food. Or we cannot afford to eat, or even find 100% organic food. We cannot avoid radiation and electromagnetic smog which is everywhere. Even if we don't use a cell phone, cordless phone, or computer, or use electricity in our homes we are bombarded from our neighbors or from outer space, cell phone, satellites. We can't escape the use and exposure of chemicals used in dry cleaning, hotel rooms, cleaning products, our homes and lawns, laundry, cosmetics, toiletry, food in restaurants, etc. If you don't use them, you will breathe them from someone else you stand next to in the grocery line, or work with. You're exposed whether you know it or not. You're being affected whether you think you are or not!

If there was ever a time when we needed to be rescued from the slew of toxins that we live in, it is now. We have been given the answer and it is MAXGXL. If you do not have high glutathione levels, the simple truth in, you are not protected.

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