It Just Makes Sense – The Link Between Wireless Technology and the Rise in Autism

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By Nancy Sarangan

Autism is an increasingly common neurological disorder that usually results in abnormal development of social interaction, communication skills and processing of sensory information. There is a considerable amount of debate and scientific study on the cause of autism and parents are growing increasingly impatient for answers. Could this be part of the puzzle?

When my daughter was diagnosed with autism, I wasn't very surprised. She had been displaying many of the signs for some time: mainly, the hands flapping, and the delay in language skills. Like any parent facing this, I wondered how and where all of this could have started.

I had done the research regarding the theories on autism – and my daughter, Kiyana, was the exception to almost all of them: (1) she has never been vaccinated, (2) she was exclusively breastfed, (3) she has never had an ear infection, (4) she has never taken any antibiotics, (5) she has never had any dairy products, (6) I avoided fish and shellfish during pregnancy, (7) took large doses of all the prenatal vitamins, and (8) I wasn't given pitocin during labor. All the commonly attributed factors did not seem to apply to her.

Then, in November of 2007 a study came out describing a possible link between autism and microwave electro-magnetic radiation (EMR) the high frequency microwaves emitted by cell phones and other forms of wireless technology [1] The study suggested that EMR inhibits the nerve cell's ability to clear toxins – most notably heavy metals – from the body, which thereby augments the onset of autistic symptoms. Biomedical researchers have found that people with autistic spectrum disorders have a difficult time efficiently excreting toxins from the body, a process known as methylation. The researchers in this EMR-Autism study set out to find out the cause of this impairment.

Essentially, excretion of toxins – specifically heavy metals – was tested by taking skin, urine, hair, and stool samples from children with autism. Initially, most of the subjects excreted very low levels of heavy metals. However, according to the test results, with a controlled reduction of exposure to EMR in the treatment areas and the subjects' homes there was a demonstrable increase over time in the levels of heavy metals excreted. Thus, it was found that by diminishing the patients' EMR exposure, their ability to detoxify metals from the body increased. The study concluded that exposure to EMR could impair a person's ability to detoxify heavy metals from the body.

The science and logic here was hard for me to reject. For us, the conclusions of the study made a lot of sense. We were among the early adopters of modern technology. We abandoned our landline phone in favor of cell phones well before that was a popular practice. From WiFi to wireless video baby monitors, we had them all. I had heard about cell-phone risks, but I assumed they were minimal and actually believed they were limited to only when holding the phone to one's head or another body part for extended periods of time. I certainly never would have expected a home WiFi system to have any effect on her. A wireless baby monitor a few inches from where she slept that we virtually never turned off only seemed like what every responsible parent would use. Yet, here I was faced with some pretty harsh evidence that these may have been the "things" contributing to her autism.

Moreover, the numbers simply add up. Looking at the increase in the prevalence of autism over the past twenty to thirty years and then at the increase in the numbers of cellular-telephone subscribers, the parallels are hard to ignore. A study from the journal Medical Hypothesis entitled "Out of time: A possible link between mirror neurons, autism and electromagnetic radiation," by Ian M. Thornton [2] showed the correlation between children with a diagnosis of autism attending US schools and US cellular phone sales, during the period 1992–2003. The correlations between the two were quite substantive.

We were naturally looking for only those things we can sense with our five senses of smell, taste, touch, sight, and sound. However, we were leaving out one thing -- the invisible threat – the threat of EMR which can affect us in ways similar to chemical substances. And their impact – if one takes a serious look at all the research out there – appears to be quite significant.

There are also parallels in biological effects. Thus far, there haven't been many studies linking wireless radiation to autism; however, there are a number on studies showing the biological abnormalities found in autism that parallel the several studies showing the biological effects of wireless radiation. When you look at the two together the results are striking.

The table below outlines what I have found so far. It is almost certainly only a partial list. The odds of these correlations simply being a coincidence are at least very unlikely.

Non-ionizing Microwave Radiation

Autism Spectrum Disorder

Leaking Calcium Ions

Hypocalcemia (Goldsworthy 2007) [3]

Boys with autism and autism-spectrum- disorder (ASD) are at higher than normal risk for thinner, less dense bones when compared to a group of boys the same age who do not have

autism. (NICHD 2008) [4] It has been speculated that this is due to the casein-free diet that many ASD children are put on; however, this has not been proven.

Weakened Blood-Brain-Barrier (Salford 2007) [5]

Peptide molecules, which come from the proteins of gluten and casein products, result in opioid activity in the brain because they pass into the brain via an opened blood-brain-barrier. (Shattock 1991) [6] This also may explain how the toxins in the environment (or injected into the blood stream) may pass through the blood-brain-barrier and affect the child's nervous system.

DNA damage – increase in the single- and double-strand breaks of DNA (Lai,1994) [7]	DNA damage and genetic mutations carry a substantial susceptibility to autism. (Weiss, 2008) [8]
Impairment of the immune system (Johansson, 2009) [9]	Antibodies found in the blood of autistic children suggest an abnormal immune response is common. (Stern, 2005)[10]
Decrease in the production of melatonin (Arnetz, 2007)[11]	Biochemical analyses performed on blood platelets and/or cultured cells revealed a highly significant decrease in melatonin level (P=3 Description: times10-11) in individuals with ASD. (Melke, 2008) [12]
Increase in apoptosis (Joubert, 2008) [13]	Studies indicate that the autistic cerebellum may be vulnerable to pro-apoptotic stimuli and to neuronal atrophy as a consequence of decreased Bcl-2 levels. (Fatemi, 2003) [14]
Decrease in levels of glutathione (Mittur 2000) [15]	Studies have shown levels of the antioxidant glutathione are typically about 50 percent lower in children with autism. (Kern 2006) [16]
Increased oxidative stress (Adey 1993) [17]	Convincing data demonstrate greater oxidative stress in groups of children with autism, as compared to controls. Oxidized biomolecules in blood (lipid peroxides in both red-cells and serum) and urine (isoprostanes) are significantly elevated in autism. The autistic brain has significantly increased levels of lipofuscin after age seven, and a more specific oxidative marker is found in cortical dendrites in even younger subjects. (McGinnis 2005) [18]
Mitochondria Dysfunction has been shown to be induced by exposure to microwave radiation. (Schmitz 2004) [19]	Biomarkers for mitochondrial dysfunction have been identified in many cases of autism and are believed to contribute to diagnostic symptoms including: cognitive impairment, language deficits, abnormal energy metabolism, and chronic gastrointestinal problems. (Rossignol, 2011) [20]
Electromagnetic fields – like those emitted by cell phones – have been shown to alter regional cerebral blood flow. (Huber 2005) [21]	In conditions like autism and chronic fatigue syndrome (CFS) it has been shown via SPECT (Single Photon Emission Computed Tomography) scans that there is a decreased

	flow of blood to the brain. (Gillberg, 1993) [22]
EMF produces pronounced changes in the molecular structure of hemoglobin and induced force acting on the charged particle of charge which may activate rouleau formation (an aggregation of red blood cells in a roll formation.) (Baieth 2008) [23]	Thrombophilia, a coagulation disorder, was found in 70% of the children with autism, and in many of the parents. (Bradstreet 2001) [24]
Reduced dopamine levels in PC12 cells exposed to low frequency electromagnetic fields (Opler 1997) [25]	Plasma and urine concentrations of homovanillic acid, a dopamine metabolite, have been reported abnormal in those with autism. (Ernst 1997) [26]
Wireless radiation leads to deaminization of amino-acids and thereby causes disturbance of ammonia utilization by the body. (Tamasidze 2007) [27]	Elevated ammonia is common in autism. A study of 65 children with autism found that 70% had levels above the reference range of the lab. (Bradstreet 2001) [24]
In an experiment on rats the concentration of serotonin was elevated in the hypothalamus of male rats after 1 month of EMF exposure. (Chance 1995) [28]	Whole blood serotonin concentration were found to be significantly higher in drug-free autistics that in typical persons. (Anderson 2006) [29]
In a Russian study of workers exposed to HF and microwave range (3 and 10 cm) EMF, the incidence of gastrointestinal tract diseases significantly increased with the increase of EMR exposure duration (Nikitina 2000) [30]	There is a high prevalence of gastrointestinal symptoms in children with autistic spectrum disorder. (Horvath 2002) [31]

While it would be premature to suggest that wireless radiation is the cause of autism, there are compelling correlations that are worthy of inquiry. Hence, I am suggesting that we need more research on this subject –by people with a moral commitment to help our children, a good understanding of bioelectromagnetics, and a good understanding of the physiological dynamics of autism.

I would like to clarify that this article does not intend to offer any vindication for vaccinations. I believe that vaccines and RF create a lethal combination. For some children, like my daughter, toxins in the environment along with high doses of RF were enough to create neurological problems, and I shudder to think what further complications she might have had if she had been vaccinated. In California, when thimerosal was taken out of vaccines statistics showed that autism rates dropped (Geier, 2006) [32]. This was not a surprise to those of us who know the toxic nature of thimerosal . Months later, the autism rates rebounded so they were higher than ever before (Schechter, 2008) [33]. Could this be that the increasing amounts of wireless radiation plus the remaining toxins from vaccines and the environment were the cause of this upsurge? It is a very plausible theory warranting investigation by ethical researchers.

Many of the anecdotal theories make sense when considering the impact of RF on autism. A recent study out of Cambridge University found that autism diagnoses are more common in

information technology-rich regions (Baron-Cohen 2011) [34]. Researchers have hypothesized that people who work in technology fields are more likely to carry genetic characteristics of autism and pass those genes on to their children. This is commonly known as the “geek syndrome” theory (Silberman, 2004) [35]. Is it the gene or is it that engineers and computer specialists more likely to be early adopters of wireless technology? Studies have shown that children from affluent school districts are more likely to be diagnosed with autism (Kaiser, 2008) [36]. Is it only due to the quality of the health care and education in those areas or are those families more likely to have high levels of wireless radiation around them? A study out of UC Davis found that if a mother, while pregnant, lives within 309 meters of a freeway, the child is twice as likely to have autism. (Volk, 2010) [37]. Could this have anything to do with the fact that virtually every freeway in America has cell phone towers every few hundred meters? Anecdotes indicate that the Amish are less likely to have autistic children. Is it possible that they are exposed to less wireless radiation than most Americans? Demographic patterns in the use of wireless technology are changing and as wireless technology becomes more ubiquitous these tendencies are naturally likely to change.

With these many possible factors, shouldn’t we be moving into this wireless age with the utmost care and caution? For example, shouldn’t we be seriously considering the worst-case scenarios of having WiFi and other wireless radiation emitting devices in our schools, daycare centers, and homes?

Our children and future generations are counting on us. The more we unravel the puzzle causing this condition, the more we can do to help our children recover and help future generations grow and develop as nature intended.

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References

[1] Mariea, T.J.; Carlo, G.L. Wireless Radiation in the Etiology and Treatment of Autism: Clinical Observations and Mechanisms. Journal of the Australasian College of Nutritional & Environmental Medicine, (2007) Vol.26:(2) pp. 3-7.

[2] Thornton I.M. (2006). Out of time: A possible link between mirror neurons, autism and electromagnetic radiation. Medical Hypotheses. January 2006. 67, pp.378–382 http://ianthornton.com/publications/pubs/Thornton_ASD_MN_06.pdf

[3] Goldsworthy A. (2007). “The Biological Effects of Weak Electromagnetic Fields: What the power and telecom companies would prefer us not to know.” Electromagnetic Fields, 2007.

http://www.radiationresearch.org/pdfs/goldsworthy_bio_weak_em_07.pdf

[4] National Institute of Child Health and Human Development (NICHD). “Thin Bones Seen In Boys with Autism and Autism Spectrum Disorder.” http://www.nichd.nih.gov/news/releases/thin_bones_in_autism_012908.cfm

[5] Salford LG, Nittby H, Brun A, Grafström G, Eberhardt JL, Malmgren L, Persson BRR. Non-Thermal Effects of EMF upon the Mammalian Brain: the Lund Experience. The Environmentalist, 2007 pp. 493-500.

[6] Shattock P, Lowdon G. “Proteins, Peptides and Autism Part II: Implications for the Education and Care of People with Autism” Brain Dysfunction, (1991) 4:(6) pp. 323-334.

[7] Lai, Henry; Singh, Narendra P. Acute low-intensity microwave exposure increases DNA single-strand breaks in rat brain cells. Bio-electromagnetics. 1995. pp. 207 – 210.

[8] Weiss LA; Shen Y; Korn JM; Arking DE; Miller DT; Fossdal R; Saemundsen E; Stefansson H; Ferreira MA; Green T; Platt OS; Ruderfer DM; Walsh CA; Altshuler D; Chakravarti A; Tanzi RE; Stefansson K; Santangelo SL; Gusella JF; Sklar P; Wu BL; Daly MJ Association between microdeletion and microduplication at 16p11.2 and autism. The New England Journal of Medicine, 2008 pp.667-75.

[9] Johansson, Olle. Disturbance of the immune system by electromagnetic fields – A potentially underlying cause for cellular damage and tissue repair reduction which could lead to disease and impairment. Pathophysiology, 2009 pp. 621-642.

[10] Stern, L; Francoeur, MJ; Primeau, MN; Sommerville, W; Fombonne, E; Mazer, BD. Immune function in autistic children Annals of allergy, asthma & immunology, 2005 pp. 558-65.

[11] Arnetz, B; Akerstedt, T; Hillert, L; Lowden, A; Kuster, N; Wiholm, C. The Effects of 884 MHz GSM Wireless Communication Signals on Self-reported Symptom and Sleep (EEG)- An Experimental Provocation Study. PIERS Online, 2007 pp: 1148-1150.

[12] Melke, J; Botros, H.G; Chaste, P; Betancur, C; Nygren, Anckarsäter, GH; Rastam, M; Ståhlberg, O; Gillberg, IC; Delorme, R; Chabane, N; Mouren-Simeoni, M-C; Fauchereau, F; Durand, C M; Chevalier, F; Drouot, X; Collet, C; Launay, J-M; Leboyer, M; Gillberg, C;

Bourgeron, T. Abnormal melatonin synthesis in autism spectrum disorders. Molecular Psychiatry, (2008) 13, 90–98.

[13] Joubert, V; Bourthoumieu, S; Leveque, P; Yardin, C. Apoptosis is Induced by Radiofrequency Fields through the Caspase-Independent Mitochondrial Pathway in Cortical Neurons. Radiaiton Research, 2008 pp. 38– 45.

[14] Fatemi, SH; Araghi-Niknam, M. Levels of Bcl-2 and P53 are altered in superior frontal and cerebellar cortices of autistic subjects. Cellular and Molecular Neurobiology, 2003 Dec;23(6) pp. 945-52.

[15] Mittur, A V; Kaplowitz, N; Kempner, E S; Ookhtens, M. Radiation inactivation studies of hepatic sinusoidal reduced glutathione transport system. Biochimica et biophysica acta, (2000) 5;1464 (2):207-18.

[16] Kern, JK; Jones, AM. Evidence of toxicity, oxidative stress, and neuronal insult in autism. Journal of Toxicology and Environmental Health, 2006 (6):485-99.

[17] Adey, W. Ross. Electromagnetics in Biology and Medicine. Modern Radio Science edited by Hiroshi Matsumoto, Published for the International Union of Radio Science by Oxford University Press, 1993 pp. 231-249.

[18] McGinnis, Woody R., MD. Oxidative Stress in Autism: What Parents Should Know. The ASA's 36th National Conference on Autism Spectrum Disorders, (July 13-16, 2005)

[19] Schmitz, C; Keller, E; Freuding, T; Silny, J; Korr, H. 50-Hz magnetic field exposure influences DNA repair and mitochondrial DNA synthesis of distinct cell types in brain and kidney of adult mice. Acta Neuropathologica (Berl), 2004; 107:(3), pp. 257 – 264.

[20] Rossignol, DA; Frye, R E. Mitochondrial dysfunction in autism spectrum disorders: a systematic review and meta-analysis. Molecular Psychiatry Published on-line January 25th, 2011.

[21] Huber, R; Treyer, V.; Schuderer, J.; Berthold, T; Buck, A., Kuster, N. Landolt, H. P. and Achermann, P. Exposure to pulse-modulated radio frequency electromagnetic fields affects regional cerebral blood flow. European Journal of Neuroscience, 2005 21 (4), pp. 1000 – 1006.

[22] Gillberg, Carina; Bjure, J; Uvebrant, P; Vestergren,E; Gillberg, C. SPECT (Single Photon Emission Computed Tomography) in 31 children and adolescents with autism and autistic-like conditions. European Child & Adolescent Psychiatry, 1993 2:(1) pp.50-59.

[23] Baieth, H. E. Abdel. Physical Parameters of Blood as a Non - Newtonian Fluid. International Journal of Biomedical Science, Dec 15, 2008 4(4) pp. 323-329.

[24] Bradstreet, J; Kartzinel, J. Biological interventions in the treatment of autism and PDD. In: Rimland B, ed. DAN! (Defeat Autism Now!)Fall 2001 Conference. San Diego, CA: Autism Research Institute; 2001.

[25] Opler, Mark; Rukenstein, Adriana; Coté, Lucien ; Goodman Reba. Reduced Dopamine Levels in PC12 Cells Exposed to Low Frequency Electromagnetic Fields. Bioelectrochemistry and Bioenergetics, May 1997;42(2) pp. 235-239

[26] Ernst, M; Zametkin, AJ; Matochik, JA; Pascualvaca, D; Cohen, RM. Low medial prefrontal dopaminergic activity in autistic children. The Lancet, August 1997 350: 9078, p. 638.

[27] Tamasidze, AG; Nikolaishvili, MI. Effect of high-frequency EMF on public health and its neuro-chemical investigations. Georgian Med News, 2007 Jan;(142):58-60. [Article in Russian]

[28] Chance, WT; Grossman, CJ; Newrock, R; Bovin, G; Yerian, S; Schmitt, G; Mendenhall, C. Effects of electromagnetic fields and gender on neurotransmitters and amino acids in rats. Physiology & Behavior, 1995 Oct 58(4):743-8.

[29] Anderson, George M.; Freedman , Daniel X.; Cohen, Donald J. ; Volkmar, Fred R.; Hoder, E. Lawrence; McPhedran, Peter; Minderaa, Ruud B. ; Hansen, Carl R.; Young, J. Gerald. Whole Blood Serotonin in Autistic and Normal Subjects. Journal of Child Psychology and Psychiatry, 2006 28:(6) pp. 885 – 900.

[30] Nikitina, V.N. Proceedings from the international workshop: Clinical and physiological investigations of people highly exposed to electromagnetic fields. St. Petersburg, Russia, October 16-17, 2000.

[31] Horvath, K; Perman, JA. Autistic disorder and gastrointestinal disease. Current Opinion in Pediatrics, 2002 14:(5) pp.583-7.

[32] Geier, David A.; Geier, Mark R. Early Downward Trends in Neurodevelopmental Disorders Following Removal of Thimerosal-Containing Vaccines. Journal of American Physicians and Surgeons, Spring 2006 11:(1) pp. 8-13.

[33] Schechter, Robert; Grether, Judith K. Continuing Increases in Autism Reported to California's Developmental Services System: Mercury in Retrograde. Archives of General Psychiatry, 2008;65(1):19-24.

[34] Baron-Cohen, Simon; Roelfsema, Martine T.; Hoekstra, Rosa A.; Allison, Carrie: Wheelwright, Sally; Brayne, Carol; Matthews, Fiona E. Are Autism Spectrum Conditions More Prevalent in an Information-Technology Region? A School-Based Study of Three Regions in the Netherlands. Journal of Autism and Developmental Disorders, 2011; DOI: 10.1007/s 10803-011-1302-1

[35] Silberman, Steve. Autism - and its milder cousin Asperger's syndrome - is surging among the children of Silicon Valley. Are math-and-tech genes to blame? Wired.com 2004.

[36] Kaiser Daily Health Policy Report. Minority, Low-Income Students Less Likely To Receive Autism Diagnosis Than More Affluent Counterparts, Survey Finds. Jan 11, 2008. Kaisernetwork.org

[37] Volk, Heather E.; Hertz-Picciotto, Irva; Delwiche, Lora; Lurmann, Fred; McConnell, Rob. Residential Proximity to Freeways and Autism in the CHARGE Study. Environmental Health Perspectives. December 2010.

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