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Early Detection of Autism (ASD) by a Non-invasive Quick Measurement of Markedly Reduced Acetylcholine & DHEA and Increased *β*-Amyloid (1-42), Asbestos (Chrysotile), Titanium Dioxide, Al, Hg & often Coexisting Virus Infections (CMV, HPV 16 and 18), Bacterial Infections etc. in the Brain and Corresponding Safe Individualized Effective Treatment

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ABSTRACT:

A brief historical background on Autism & some of the important symptoms associated with Autism are summarized. Using strong Electro Magnetic Field Resonance Phenomenon between 2 identical molecules with identical weight (which received U.S. Patent) non-invasively & rapidly we can detect various molecules including neurotransmitters, bacteria, virus, fungus, metals & abnormal molecules. Simple non-invasive measurement of various molecules through pupils & head of diagnosed or suspected Autism patients indicated that in Autism patients following changes were often found: 1) Acetylcholine is markedly reduced; 2) Alzheimer's disease markers (i.e. β-Amyloid (1-42), Tau Protein, Apolipoprotein (Apo E4)) are markedly increased; 3) Chrysotile Asbestos is increased; 4) Titanium Dioxide (TiO_2) is moderately increased; 5) Al is moderately increased; 6) Hg is moderately increased; 7) Dopamine, Serotonin & GABA are significantly reduced (up to about 1/10 of normal); 8) Often viral infections (such as CMV, HHV-6, HPV-16, HPV-18, etc.), and Bacterial infections (such as *Chlamydia trachomatis, Mycobacterium TB, Borrelia Burgdorferi*, etc.) coexist. Research by others on Autism spectrum disorder (ASD) shows that it is a group of complex neurodevelopmental disorders, with about 70% of ASD patients also suffering from gastro-intestinal problems. While Alzheimer disease (AD) is characterized by formation of 1) Amyloid plaques, 2) Neurofibrillary tangles inside of neurons, and 3) Loss of connections between neurons. More than 90% of AD develops in people over the age of 65. These 3 characteristics often progressively worsen over time. Although Autism Spectrum Disorder and Alzheimer's disease are completely different diseases they have some similar biochemical changes. Eight examples of such measurement & analysis are shown for comparison. Most of Autism patients improved significantly by removing the source or preventing intake of Asbestos, TiO_2, Al & Hg or enhancing urinary output of above abnormal substances & coexisting infections, if treatment is given early. When HPV-16 & HPV-18 coexist, at triangular central area of the top of head, in addition to inability to talk, severe neuromuscular problems of lower extremity were found to also exist. However, if treatment is given 3~4 years after onset of Autism symptoms, even when successful biochemical reduction of above abnormal substances occurs, clinical improvement is less significant, since permanent damage in brain tissue seems to already exist. Therefore, early diagnosis & early treatment is very important for both Autism & Alzheimer's disease. In addition the optimal doses of Vitamin D_3 and Taurine may play an important role in the future treatment of Autism, Alzheimer's Disease and memory disturbances by significantly increasing Acetylcholine and DHEA levels, enhancing the excretion of toxic substances in the urine, as well as having an anticancer effect.

Key Words: Autism (ASD Autism Spectrum Disorder); Schizophrenia; Early Alzheimer's Like Disorder in children; Acetylcholine; Alzheimer's disease; β-Amyloid (1-42); Apolipoprotein (Apo) E4; Asbestos (Chrysotile); Titanium Dioxide (TiO_2); Al; Hg; HPV-16; HPV-18; Lime Disease.

Introduction

Historical Background of the Establishment of the Concept of Autism

Eugen Bleuler, professor of psychiatry at University of Zurich, introduced a new term "Schizophrenia" in 1908 for the 1st time. To describe "Schizophrenia", he also used a new word "Autism" in 1910. He used a first time word Autism to describe individual with Schizophrenia who has lost contact with reality. He described as autistic withdrawal of the patient to his fantasies. He adapted the word Autism from Greek word *autos*, which means "self"[1].

In 1938, Hans Asperger, professor of pediatrics at the University Children's Hospital in Vienna, Austria, adapted Bleuler's term "Autism" in his lecture [2].

In 1943, Professor Leo Kanner, who was a pioneer in the field of child psychiatry at John's Hopkins University, introduced first well-studied diagnostic category of Autism using clinically well-studied examples of 11 Autism patients, with 8 boys and 3 girls. He described childhood involving social & language impairment & the presence of restricted or repetitive behaviors and children have a similar loss of contact with reality as described by Bleuler, but did not have Schizophrenia. He describes an "extreme autistic aloneness"[3].

In 1944, Professor Hans Asperger reported 4 children with pattern of behavior he called "autistic psychopathy". They have abnormal behavior included reduced empathy, difficulty with forming friendship, impairment in the in the ability to maintain reciprocal conversations and clumsiness [4].

After these most important works, there were many additional works about Autism. Best well-known summary of the Autism associated problems most often used in diagnosis of Autism in children was the 8 major items described by British psychiatrist Lorba Wing in "Aspects of Autism: Biological Research" published in Journal **Psychological Medicine** [7].

In 1994, after American Psychiatry Association included Lorba Wing's work in the widely used **Diagnostic & Statistical Manual of Mental Disorders, 4th edition.** As more people become interested in the broad categories in Autism, it became easier to understand the problem. The following table was adapted from Gillian Baird et al summarized as 8 main categories and for each category, he put the most severely disabled as number (1) then (2) & (3) to number (4) which is least severely disabled. In Table 1, we adapt the list as examples of 8 categories of most severely disabled & least disabled.

1. Social interaction: (1) unfriendly and indifferent. (4) Makes bizarre one-sided approaches.
2. Social communication (verbal and non-verbal): (1) No communication. (4) Spontaneous, but repetitive, one-sided, odd
3. Social imagination: (1) No imagination. (4) Verbal, abstract (e.g. Batman) repetitively; may use other children as "mechanical aids".
4. Repetitive pattern of self-chosen activities: (1) No imagination. (4) Verbal, abstract (e.g. timetables, movements of planets, repetitive questioning)
5. Language-formal system: (1) No language. (4) Grammatical but prolonged, repetitive, literal interpretations
6. Responses to sensory stimuli (oversensitive to sound; fascinated by lights; touches; tastes; self spinning; markedly reduced insensitivity to bad smells; indifferent to pain, heat, cold, etc.): (1) Very marked. (4) Minimal absent
7. Movements (flaps, jumps, rocks, tiptoe walking, odd hand postures, etc.): (1) Very marked. (4) Minimal or absent.
8. Special skills (manipulation of mechanical objects, music; drawing; mathematics; rote memory; constructional skills, etc.): (1) No special skills. (4) One skill at high level well above chronological age, very different from other abilities.

Table 1: Adapted from table presented by Gillian Baird, Hilary Cass, Vicky Slonims, "Diagnosis Of Autism", published in 2003 in Journal **British Medical Journal,** which is based on Lorba Wing's work & earlier work before him [11].

From the beginning of the development of new concept of Autism, although because of the existence of broad variety of symptoms among different patients, most of the authors who contributed to the formation of broad Spectrum of Autism thought they must have organic pathology, but there was no simple way telling what was causing the problem.

However, with the progress of the modern science and technology, more reliable scientific methods have been gradually developed. As a result, many potential causes have been confirmed. But most of their percentage of the actual cause is not so significant. However, in recent study at Harvard University, researches compared brain of a normal patient and that of an Autism patient; detected developmental problems exist in cerebellum [8,33]. With our method of detecting localization using strong Electro-Magnetic field resonance phenomenon between 2 identical molecules with identical weight, we are able to detect many molecules and substances including Neurotransmitters (such as Acetylcholine, serotonin, GABA, Dopamine), β-Amyloid (1-42), Apo E4, Asbestos, Titanium Dioxide, Aluminum, Lead, Hg, and we can non-invasively measure these substances from the brain [40, 41-74]. For this method, U.S. Patent was given in 1993. According to our study, we found many Autism patients' brain had increased β-Amyloid (1-42), Apo E4, Asbestos and marked reduced Acetylcholine. Some of the examples are shown in the following clinical examples of examination. For treatment, we

use individualized treatment for existing abnormalities and examples of this treatment are also shown later in clinical examples.

Potential Contributing Causes & Theory of Autism

The causes of the Autism Spectrum Disorder (ASD) have a broad variation. It is often difficult to pinpoint what is the real cause. There are many theories with partially supporting evidences and many factors that require more research. Here, we summarize these theories as proposed by many researchers. We consider genetic factors and environmental factors are both involved and are equally important. Environmental factors are classified into 2 parts: Prenatal Environment & Postnatal Environment, which are listed as the following 22 possible causes, proposed by researchers & family members of Autism patients.

1. Toxic substances [10]
2. Reduced cerebellum development [8,9,27,28,29]
3. Amygdala neurons pathology[14]
4. Possibility of sex chromosome involvement since ASD ratio between boy and girl is about 3~4:1, which indicates either sex chromosome or hormone may be involved [33]
5. Autoimmune disease theory[13,37]
6. Endogenous opiate precursor theory [6]
7. Gastrointestinal connection and imbalance of microbiota and microbiome (all the genes present in microbiota) [17,35, 81]
8. Lack of vitamin D [32]
9. Locus coeruleus - noradrenergic system abnormality [22]
10. Lead, Pb effect [19]
11. Mercury, Hg effect [13]
12. Oxidative Stress [30]
13. Thiomersal (thimerosal) (bacterio-static & anti-fungal drug used as preservative in Vaccine. This molecule also contain Hg & Sulphur atom) [9]
14. Refrigerator mother Theory (When Prof. Leo Kanner first identified Autism in 1943, he noted the lack of warmth among the parents of autistic children. But later he rejected it by focusing on brain mechanisms)[3,5]
15. Vaccines induced [18,23,36]
16. MMR (Measles, Mumps, and Rubella) vaccine [26]
17. Viral infection in brain [15, 49, 52]
18. Titanium Dioxide Nanoparticles in food coloring (Prof. Ken Takeda reported gene affected & Titanium Dioxide Nanoparticles are associated with childhood disorder such as Autism, epilepsy & learning disability) [24,25,31,34,38, 77, 78]
19. Markedly reduced Acetylcholine in brain [44, 49]
20. Increased Asbestos (Chrysotile asbestos is the most common; Crocidolite & Tremolite are rare) in brain [60, 65, 71]
21. Increased β-Amyloid (1-42); Tau Protein; Apo E4 (these Alzheimer's disease markers are increased) in brain [49]
22. Aluminium, Al; abnormally increased in brain [44, 47, 49, 75,76]

Since number 14 above is rejected by original author, Prof. Leo Kanner, among the remaining 21 updated list of potential Autism causes shown above, items 17 to 22 were also proposed by the 1st author, Omura Y, through his clinical research on brain of Autism patients through non-invasive quick measurement on brain of Autism patients of common neurotransmitters, metals, Asbestos & various pathogenic molecules as well as bacterial & viral infections. We also often found viral & bacterial infection & increased Hg in the brain of Autism patients.

According to Francesca Happe & Angelica Ronald, Autism is diagnosed on the basis of the following triad: 1) impairment in social interaction 2) impairment in communication 3) impairment of flexible imaginative function (with restricted and repetitive behaviors and interests (RRBIs)) [21]. They claimed the 3 parts of the triad do co-occur beyond chance, while they can be found in isolation too. Here we are going to list some of the well-known symptoms associated with broad ASD.

Common Symptoms of Autism that can be Identified Easily by Others

1. Most of ASD child have talking delay & some cannot talk or only talk few words even after 1 & half years old or older than 2 years;
2. ASD child has poor eye contact as if avoiding seeing others' face with lack of facial expression when others try to look at the child's eyes or face;
3. ASD child often isolates from and avoids joining group activity;
4. ASD child resists cuddling and holding and seems to prefer playing alone as if retreating into his or her own world;
5. Some of ASD child talks with abnormal tone or rhythm such as singsong voice or robot-like talk;
6. ASD child performs repetitive movement, such as rocking, spinning or hand-flapping, or may perform activities that could cause harm, such as repeated head-banging;
7. Close to half of ASD child has insensitivity to strong bad smell like rotten fish or sour milk that normal children immediately try to avoid (ASD child has long response time for sniff fest);
8. Some of ASD child are oversensitive or under-sensitive to sound.
9. ASD child move excessively or in a reduced manner
10. Boys with Regressive ASD, born with normal size, large head circumference will develop rapidly well before loss of skills. Some ASD boy born with large head circumference with poor eye contact & slow development of talking can rapidly became normal between 2.5 & 3 years old.
11. Some of ASD child arranges toys in row, straight lines, particularly with trains or cars
12. Some ASD children shows fascination in spinning objects and also spinning themselves or objects
13. Some of ASD child often has difficulty of swallowing in early infancy to 2~3 years & often vomit by sudden body movement;
14. Some of the ASD children have sign of low intelligence; but other children with ASD have normal or higher intelligence but have trouble communicating and applying what they know into everyday life and adjusting to social situations; some of the

children with ASD have exceptional skills in a specific area, such as art, mathematics or music.

Other Conditions that appear to resemble to ASD:

ADHD (Attention Deficit & Hyperactivity Disorder) (originally known as Attention Deficit in children is characterized by Inattention & Hyperactive-impulsive behavior and they may last to adulthood)

Typical signs & symptoms of ADHD [38]:

1. Often difficulty paying attention
2. Frequently daydreaming
3. Difficulty following through on instructions and apparently not listening
4. Frequently has problems organizing tasks or activities
5. Frequently forgetful and loses needed items, such as books, pencils or toys
6. Frequently fails to finish schoolwork, chores or other tasks
7. Easily distracted
8. Frequently fidgets or squirms
9. Difficulty remaining seated and seemly in constant motion
10. Excessively talkative
11. Frequently interrupts or intrudes on others' conversations or games
12. Frequently has trouble waiting for his or her turn

Evidence supports neurobiological and genetic origins of ADHD. Structural and functional imaging studies suggest that dysfunction in the fronto–subcortical pathways, as well as imbalances in the dopaminergic and noradrenergic systems, contribute to the pathophysiology of ADHD. Medication with dopaminergic and noradrenergic activity seems to reduce ADHD symptoms by blocking dopamine and norepinephrine reuptake [16].

Our research indicated that ADHD is not related to ASD since the following findings of ADHD are completely opposite of ASD:

1. Acetylcholine in forehead is not reduced significantly;
2. There is no Asbestos increase in brain;
3. Alzheimer's disease markers are not increased in brain;
4. Serotonin & Dopamine are normal but GABA is reduced.

New findings discovered from non-invasive measurement of neurotransmitters (Acetylcholine, Serotonin, Dopamine, GABA), DHEA, Pathogenic factors (Alzheimer's disease related factors), Asbestos (Chrysotile Asbestos, Crocidolite & Tremolite), Metals (particularly Al, Hg, Pb), Viruses (CMV, HHV-2 & -3, HHV-6, HPV-16 & -18) &Bacteria (*Borrelia Burgdorferi, Chlamydia trachomatis*, Mycobacterium T.B.) etc.

During 1998-present, most of our non-invasive & clinical researches about abnormalities of the brain were on memory problems, Alzheimer's disease & Autism. Our study already indicated the following unique similar findings in both Alzheimer's patients' brain & children with Autism [40-73]:

1. Marked reduction in Acetylcholine;
2. Increase in Asbestos (mainly Chrysotile Asbestos, but occasionally Crocidolite or Tremolite Asbestos);
3. Increase in Alzheimer's marker β-Amyloid (1-42);
4. Increase in Alzheimer's marker Tau Protein;
5. Increase in Alzheimer's marker Apo E4;
6. Increased Aluminum;
7. Increased Mercury.

The above 7 changes appeared with or without some of the infections such as CMV, Mycobacterium T.B., *Chlamydia Trachomatis, Borrelia Burgdorferi*, HHV-6, HPV-16 or HPV-18.

In around the year 2000, Dr. K in New Jersey brought his wife as an Alzheimer's patient & no previous treatment had improved her condition. He wanted the 1st author of this article to evaluate if he can do something to help, before she was scheduled to go to a special hospital for the rest of her life. However, after 1 weekend of evaluation and treatment by reducing Chrysotile Asbestos & Alzheimer's marker & increasing Acetylcholine, her symptom subsided significantly and she no longer needed to go to the special hospital. She was able to function as his secretary of his dental office since then. However, Dr. K began to lose his memory. Several years later, eventually, Dr. K himself developed Alzheimer's disease but he could not remember to take medication, stopped coming to our meeting and later died.

After rapid improvement of his wife's Alzheimer's disease, he informed the 1st author that in the same small area of the New Jersey town, several children developed Autism. He wanted us to examine these patients. During our 3-day weekend of seminars & workshops, he brought 7 children with already diagnosed Autism from same small part of the town in New Jersey. By non-invasively analyzing these patients' brains with the list of substances mentioned in the subtitle of this section, we found everyone of the Autism patients brought to our 3-day weekend seminar & workshop had significant increase in Chrysotile Asbestos in the brain & rest of the body, markedly reduced Acetylcholine, abnormally increased β-Amyloid (1-42), abnormally increased Tau Protein & increased Aluminum. When we are able to reduce Asbestos & β-Amyloid (1-42), Tau Protein, Apo E4, Al & increase Acetylcholine significantly from less than 1ng to over 1000ng & also increased DHEA from less than 1ng to over 100ng, most of these children had significant improvements in symptoms.

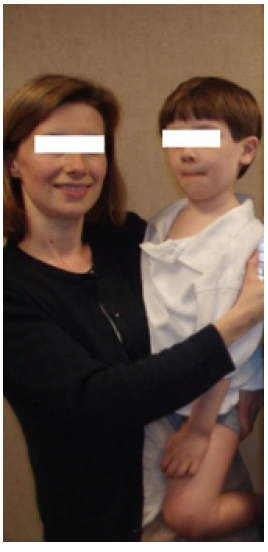
In this section, we are going to present some of the typical abnormal findings found in pupils of Autism or suspected Autism patient. However, just like Alzheimer's disease in adults, when the treatment started, 3~4 years after the discoverer of the symptoms, even

we are able to reduce theses abnormal findings in the brain significantly & prevent worsening, clinical improvement of the symptoms was not significant. Probably, permanent damage is already established after 3 or 4 years after onset of the problem. Therefore, just like Alzheimer's patients, we recommend treatment based on abnormal finding in brain to start as soon as possible during first 3 years after abnormal symptoms were recognized or diagnosis was first made.

Since we found for the Autism patients he bought to our 3 days weekend seminar & workshop, all of them had increased Chrysotile Asbestos in brain, & Dr. K's Asbestos in brain was also measured and found increase in Chrysotile Asbestos. 1st author visited Dr. K's office and found not only ceiling & some parts of wall of his office had Chrysotile Asbestos, many parts of the whole building had high amount of the Chrysotile Asbestos. We eventually found in the area where multiple children developed Autism was old abandoned Asbestos mine in 19th century.

Clinical Examples of Children Previously Diagnosed as Autism or Suspected of Autism

Case 1: 5 years old boy James previously diagnosed as Autism



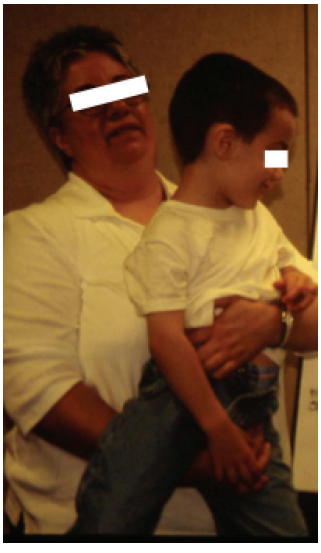
R-Pupil	Substance or Test	L-Pupil
0.75ng	Acetylcholine	0.75ng
7.5ng	β-Amyloid (1-42)	3.5ng
0.45ng	Apo E4	0.45ng
0.075ng	DHEA	0.075ng
0.5ng	Serotonin	0.5ng
0.5ng	Dopamine	0.5ng
0.5ng	GABA	0.5ng
0.05mg	Asbestos (Chrysotile)	0mg
0.15mg	Titanium Dioxide (TiO_2)	0
-12	BDORT	-3
0.25ng	Oncogene C-fosAb2	0.25ng
0.43mg	Al	0.43mg
0.09mg	Hg	0.09mg
500ng	HHV-6	0
1600ng	CMV	1600ng
10 µg	Mycobacterium TB	10 µg
0.5pg	1α, $25(OH)_2Vit.D_3$	0.5pg

Figure 1: 5 years old boy, held by mother. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils

From the above table, we can immediately tell that his brain, particularly both right side & left side of his brain cannot function normally since Acetylcholine on both sides of the brain is 0.75ng, which is less than 1ng, indicating brain function is significantly reduced.

Alzheimer's disease marker β-Amyloid (1-42) is 7.5ng on the right side of the brain, which indicates right side of the brain is equivalent to Alzheimer's disease, but on the left side of the brain, β-Amyloid (1-42) of 3.5ng is within the higher range of the normal. Both sides of Apo E4, which is also an Alzheimer's marker, were increased to 0.45ng, which indicates that both side of the brain is increased to equivalent of Alzheimer's disease. DHEA is extremely low as 0.075ng of both sides of brain, which indicates adrenal gland is not functioning normally. Also, based on our previous analysis, we can make additional diagnosis that he has a deficiency of Vitamin D3 when Acetylcholine is less than 1ng & DHEA is less than 1ng. Neurotransmitters Serotonin, Dopamine & GABA are all 0.5ng on both sides of the brain, which is reduced to about 1/10 of normal average value of about 5ng. Interesting thing is that Asbestos is 0.05mg on the right side of the brain but it's 0 on the left side. Our previous study indicates Asbestos; particularly Chrysotile Asbestos was always increased in Autism's & Alzheimer's disease. Normally it should be zero. Titanium Dioxide (TiO_2) is moderately high in the right pupil, but in the left pupil it was 0. BDORT in the right pupil was (-) 12, indicating very abnormal, but in the left side, it is (-)3, indicating mild abnormality. Since BDORT is large (-) value of over (-)8, often malignancy should be considered. Oncogene C-fosAb2was 0.25ng on both sides of the brain, indicating there was not very serious malignancy but since it was more than 0.1ng, very early stage of insignificant pre-caner may existed. Aluminum in both sides of the brain was increased significantly to 0.43mg. We often found abnormally high increased Al in all the previous Autism patients. In addition, we examined the virus infections. HHV-6 was moderately high infection of 500ng in the right pupil, but in the left pupil it was 0. CMV was increased both to 1600ng, which was a serious infection. Mycobacterium TB was considerably high 10 μg for both sides of the brain. Interesting thing is child's mother's pupils show approximately similar amount of infections of CMV & Mycobacterium TB as those of her son. Asbestos & Titanium Dioxide were not detected from mother's pupils. Therefore, in this child's case, mother should also be treated for CMV & Mycobacterium TB. There is a good reason why right side of BDORT is (-)12. It's because Asbestos, Titanium Dioxide and HHV-6 only exists at the right pupil. This problem can be more effectively treated by first giving optimal dose of Vitamin D_3 since active form of so-called Vit.D_3 receptor stimulant 1α,25$(OH)_2$Vit.D_3 is markedly reduce to 0.5pg, compared with normal value of about 5.5pg. Then followed by optimal dose of cilantro & optimal dose of EPA with DHA.

Case 2: 5 years old boy Thomas, previously diagnosed as Autism



R-Pupil	Substance or Test	L-Pupil
0.55ng	Acetylcholine	0.55ng
7.5ng	β-Amyloid (1-42)	7.5ng
0.45ng	Apo E4	0.45ng
0.5ng	DHEA	0.5ng
0.5ng	Serotonin	0.5ng
0.5ng	Dopamine	0.5ng
0.5ng	GABA	0.5ng
0.05mg	Asbestos (Chrysotile)	0mg
0.1mg	Titanium Dioxide (TiO_2)	0
-12	BDORT	-4
0.5ng	Oncogene C-fosAb2	0.5ng
0.44mg	Al	0.44mg
0.08mg	Hg	0.08mg
500ng	HHV-6	500ng
1500ng	CMV	1500ng
1000ng	Chlamydia Trachomatis	1000ng
10 µg	Mycobacterium TB	10 µg
0.5pg	1α, $25(OH)_2$Vit.D_3	0.5pg

Figure 2: 5 years old boy Thomas. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils

As can be seen in the above table, Acetylcholine is less than 1ng, namely 0.55ng on both right & left pupils. Alzheimer's marker β-Amyloid (1-42) was 7.5ng at both sides of the brain, indicating he has equivalent condition of Alzheimer's disease in adult. Another Alzheimer's marker Apo E4 was 0.45ng at both pupils, again indicating abnormally high and equivalent of Alzheimer's disease. DHEA is very low amount, less than 1ng, in his case 0.5ng on both sides of the pupil, which is extremely low, indicating a problem in adrenal gland function. Low Acetylcholine less than 1ng and low DHEA of 1ng indicate Vitamin D_3 deficiency. 1α, $25(OH)_2$Vit.D_3, which is active stimulant of so-called Vit.D_3 receptors, is reduced from normal value of 5.5pg to 0.5pg, indicating presence of Vitamin D_3 deficiency. Serotonin, Dopamine & GABA is reduced to 0.5ng on both sides of pupils. Chrysotile Asbestos only increased on the right side to 0.05mg, but in the left pupil it was 0. TiO_2 is only increased significantly in the right pupil but is 0 on the right pupil. BDORT was very strongly negative of (-)12 on the right pupil, indicating significant abnormal condition. On the left pupil, it was (-) 4, indicating mild abnormality. Oncogene C-fosAb2 was increased to 0.5ng on both sides, indicating there is no significant malignancy but indicating possibility of very early stage of insignificant pre-cancer or pre-pre-cancer. Aluminum was increased in both pupils. HHV-6 was increased 500ng at both pupils. CMV was also increased to 1500ng in both pupils. Chlamydia Trachomatis was also increased to 1000ng on both pupils. Mycobacterium TB was increased to 10 µg on both sides of pupils. We examined the mother's pupils, we found mother have about same amount of infections of *Chlamydia trachomatis* & Mycobacterium TB. But she did not have Asbestos or TiO_2 or increase in Alzheimer's disease markers.

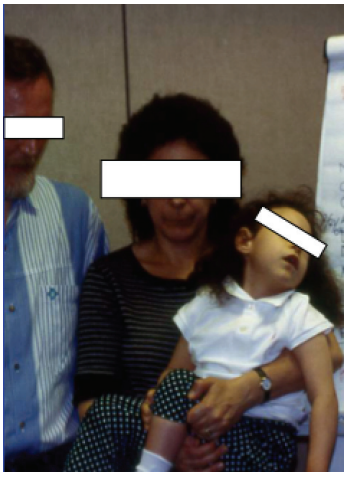
Case 3: 2 month old boy, previously suspected of possible Autism

R-Pupil	Substance or Test	L-Pupil
0.59ng	Acetylcholine	0.59ng
6.0ng	β-Amyloid (1-42)	6.0ng
0.375ng	Apo E4	0.375ng
0.065ng	DHEA	0.065ng
0.75ng	Serotonin	0.75ng
0.75ng	Dopamine	0.75ng
0.75ng	GABA	0.75ng
0.04mg	Asbestos (Chrysotile)	0.04mg
0.15mg	Titanium Dioxide (TiO_2)	0.15mg
-6	BDORT	-5
0.25ng	Oncogene C-fosAb2	0.25ng
0.2mg	Al	0.2mg
0.1mg	Hg	0.1mg
1200ng	CMV	1200ng
3700ng	Chlamydia Trachomatis	500ng
22 µg	Mycobacterium TB	24 µg
0.5pg	1α, $25(OH)_2Vit.D_3$	0.5pg

Figure 3: 2 months old boy, held by mother. Both father & grandfather Dr. K are standing behind. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils.

This 2 months old boy had Acetylcholine less than 1ng & Alzheimer's marker β-Amyloid (1-42) in both pupils was increased to 6ng. Apo E4 also increased in both sides to 0.375ng, indicating he is approaching condition similar to Alzheimer's disease in adults. DHEA is extremely reduced to 0.065ng on both sides indicating very significant Vitamin D_3 deficiency & markedly reduced Vitamin D_3 receptor stimulant 1α, $25(OH)_2Vit.D_3$ of only 0.5pg instead of normal value of about 5.5pg was confirmed. Asbestos was significantly increased to 0.04mg at both pupils. Titanium Dioxide (TiO_2) was also increased significantly at both sides of pupil. BDORT is (-)6 on the right side, (-)5 on the left side. Oncogene C-fosAb2 of 0.25ng had no significant increase, indicating no significant malignancy but it is over 0.1ng, possibility of very early stage of insignificant pre-cancer or pre-pre-cancer exist. Aluminum & Hg were increased moderately. CMV was increased to 1200ng. Chlamydia Trachomatis at right pupil was extremely high as 3750 and 500ng on the left side. Relatively strong infection of Mycobacterium TB was 22 µg on the right side & 24 µg on the left side. These findings indicate this male baby had early Autism & was equivalent to early stage of Alzheimer's disease in adults. When these abnormalities were treated in such early stage, the child made very significant improvement & became almost normal in one month. His grandfather Dr. K was very happy. Both parents of the baby did not have any significant abnormality of brain.

Case 4: 4 years old girl, previously diagnosed as Autism with difficulty talking, standing & walking



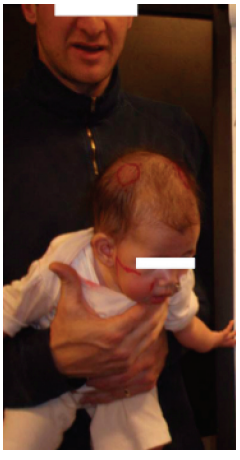
R-Pupil	Substance or Test	L-Pupil
1.75ng	Acetylcholine	1.75ng
7.5ng	β-Amyloid (1-42)	7.5ng
0.475ng	Apo E4	0.475ng
0.080ng	DHEA	0.080ng
0.8ng	Serotonin	0.8ng
0.8ng	Dopamine	0.8ng
0.8ng	GABA	0.8ng
0.08mg	Asbestos (Chrysotile)	0.08mg
0.15mg	Titanium Dioxide	0.15mg
-8	BDORT	-7
0.8ng	Oncogene C-fosAb2	0.8ng
0.2mg	Al	0.2mg
0.05mg	Hg	0.05mg
300ng	HHV-6	300ng
500ng	HPV-16	500ng
300ng	HPV-18	300ng
500ng	CMV	500ng
1350ng	Chlamydia Trachomatis	1350ng
41µg	Mycobacterium TB	0 µg
0.5pg	1α, $25(OH)_2Vit.D_3$	0.5pg

Figure 4: 4 years old girl, held by her mother, with her father standing by side. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils.

This 4 years old girl had difficulty talking, standing & walking due to spastic muscles of feet & foot since birth & all the previous treatment failed to improve. This girl had Acetylcholine 1.75ng on both right & left pupils. But Alzheimer's disease marker β-Amyloid (1-42) was 7.5ng as well as Apo E4 in both pupils was 0.475ng, which already reached to condition equivalent of Alzheimer's disease in adult. DHEA is every low as 0.080ng, indicating significant adrenal gland problem and marked Vitamin D_3 deficiency confirmed by markedly reduced 1α, $25(OH)_2Vit.D_3$ of 0.5pg compared with normal value of 5.5pg. Asbestos & TiO_2 was significantly increased at both sides of pupil. BDORT is (-)8 on the right side, (-)7 on the left side. Oncogene C-fosAb2 in both right & left sides was 0.8ng, which is larger than 0.1ng, indicating very early stage of pre-malignancy may exist & our analysis indicated possible presence very early stage of pre-cancer of Chronic Myelogenous Leukemia (-)7 although standard lab tests could not detect it. Aluminum & Hg were increased. She had infection of HHV-6, CMV & Chlamydia Trachomatis in both sides of the brain. But the most significant abnormality was Mycobacterium TB of 41 µg on only right side of the brain but the left side is close to 0. This patient suffered from most difficult to improve lack of speech & multi-dysfunction of extremities. When HPV-16 & HPV-18 infections exist at hairy part of center of forehead often abnormal

motor function of feet & leg are involved as seen in this patient if this patient's causes of problems. If this patient's causes of problems were detected & treated early before semi-permanent change was established, probably problems were improved much quicker & more easily.

Case 5: 6 months old girl Ava, previously suspected of Autism



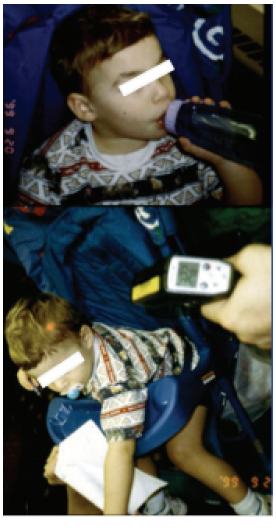
R-Pupil	Substance or Test	L-Pupil
80ng	Acetylcholine	80ng
2ng	β-Amyloid (1-42)	2ng
0.15ng	Apo E4	0.15ng
15ng	DHEA	15ng
15ng	Serotonin	15ng
15ng	Dopamine	15ng
15ng	GABA	15ng
0mg	Asbestos (Chrysotile)	0mg
0	Titanium Dioxide	0
-1	BDORT	-1
0.00ng	Oncogene C-fosAb2	0.00ng
0.25mg	Al	0.25mg
0	Hg	0
50ng	CMV	50ng
5.5pg	1α, $25(OH)_2Vit.D_3$	5.5pg

Figure 5: 6 months old girl Ava, held by her father. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils.

This 6 months old girl had Acetylcholine 80ng & Alzheimer's disease marker β-Amyloid (1-42) as well as Apo E4 was within normal range. Therefore, this baby girl cannot have Autism. DHEA was 15ng, which is again much higher than 1ng & not a characteristic of Autism. Asbestos & TiO_2 did not exist in both pupils. BDORT is (-) 1 at both sides of pupils. Oncogene C-fosAb2 was 0 in both pupils. Al was significantly increased to 0.5mg but Hg was zero. High Al of 0.25mg may be due to preparation of milk & other drinks using Aluminum pot heating or Aluminum containing body powder. 50ng of CMV was insignificant. She had no significant infections. The only possible beneficial treatment required was optimal dose of DHEA since she had no Vitamin D_3 deficiency as 1α, $25(OH)_2Vit.D_3$ is normal value of 5.5pg, which can increase both Acetylcholine & DHEA level. Optimal dose of DHEA can often increase Acetylcholine to maximum 1000~4050ng & DHEA 100~130ng.

Case 6: 2 years old boy, previously diagnosed as Autism

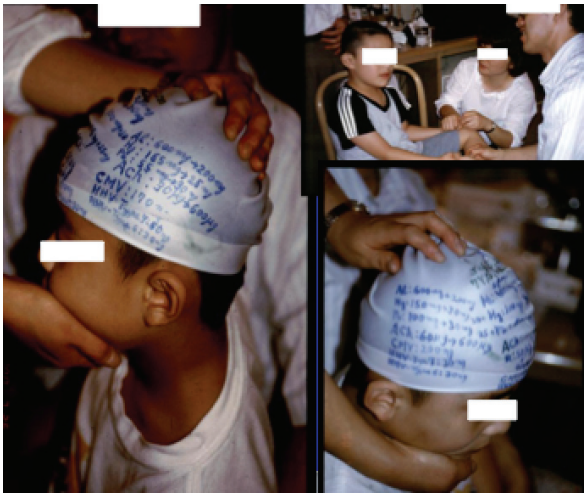
His Acetylcholine was 0.55ng, which is extremely low and Alzheimer's disease marker β-Amyloid (1-42) was 7.5ng in both pupils and Apo E4 was 0.45ng in both pupils, indicating he has an equivalent condition of Alzheimer' disease in adult. DHEA was extremely low amount of 0.025ng at both sides of pupil. Markedly reduced Acetylcholine and DHEA indicated that he had a severe Vitamin D_3 deficiency. He has a very high concentration of Chrysotile Asbestos of 0.1mg, which is another characteristic finding for Autism or Alzheimer's disease patient but Asbestos 0.1mg is very high and can contribute to future development of possible malignancy of brain & many other problem of internal organs. TiO_2 was mildly increased in both pupils. BDORT (-)12 in both sides of pupils and brain indicated strong abnormality. But Oncogene C-fosAb2 of 0.25ng indicated no significant malignancy but very early stage of insignificant pre-cancer or pre-pre-cancer may exist, since Oncogene C-fosAb2 is more than 0.1ng. Al was significantly increased to 0.2mg in both sides of pupils and brain. Hg was also increased to 0.25mg in both pupils. He had a significant CMV infection of 1250ng in both sides of brain.



R-Pupil	Substance or Test	L-Pupil
0.55ng	Acetylcholine	0.55ng
7.5ng	β-Amyloid (1-42)	7.5ng
0.45ng	Apo E4	0.45ng
0.025ng	DHEA	0.025ng
0.5ng	Serotonin	0.5ng
0.5ng	Dopamine	0.5ng
0.25ng	GABA	0.25ng
0.1mg	Asbestos (Chrysotile)	0.1mg
0.2mg	Titanium Dioxide	0.2mg
-12	BDORT	-12
0.25ng	Oncogene C-fosAb2	0.25ng
0.2mg	Al	0.2mg
0.25mg	Hg	0.25mg
1250ng	CMV	1250ng
0.5pg	$1\alpha, 25(OH)_2Vit.D_3$	0.5pg

Figure 6: 2 years old boy. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils.

Case 7: 7 years old boy, previously diagnosed as possible Autism



R-Pupil	Substance or Test	L-Pupil
0.5ng	Acetylcholine	0.5ng
2ng	β-Amyloid (1-42)	2ng
0.125ng	Apo E4	0.125ng
0.025ng	DHEA	0.025ng
0.5ng	Serotonin	0.5ng
0.5ng	Dopamine	0.5ng
0.5ng	GABA	0.5ng
0.05mg	Asbestos (Chrysotile)	0.05mg
0	Titanium Dioxide	0
-2	BDORT	-2
0.5ng	Oncogene C-fosAb2	0.5ng
0.5mg	Al	0.5mg
0.125mg	Hg	0.125mg
0	CMV	0
5.5pg	1α, $25(OH)_2Vit.D_3$	5.5pg

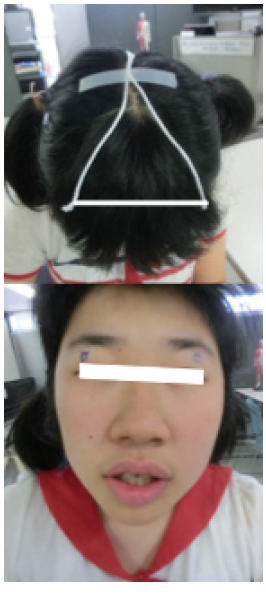
Figure 7: 7 years old boy. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils.

Although his Acetylcholine on both sides of brain was very low value of 0.5ng, Alzheimer's disease marker β-Amyloid (1-42) and Apo E4 were both within normal limits. DHEA was extremely low amount of 0.025ng at both sides of pupil. Markedly reduced Acetylcholine and together with low DHEA indicated that he may have a severe $Vit.D_3$ deficiency but measurement of 1α, $25(OH)_2Vit.D_3$ was completely normal value of 5.5pg and indicated he has no $Vit.D_3$ deficiency. Therefore, possibility of abnormal condition of D_3 insensitive receptors cannot be ruled out. He had increased Chrysotile Asbestos of 0.05mg on both pupils, but TiO_2 was 0. BDORT was (-)2 in both sides of pupils. His Oncogene C-fosAb2 of 0.5ng indicated there is no significant malignancy in both sides of pupils and brain but it is higher than 0.1ng. There is possibility of existence of very early stage of insignificant pre-cancer. However, Al was significantly increased to

0.5mg and Hg was also increased to 0.125mg. His CMV was 0. Therefore, he did not satisfy Autism conditions. But increased Asbestos of 0.05mg & increased Al and Hg can add high risk for developing future malignancy because Chrysotile Asbestos was increased in almost every malignancy.

Case 8: 15 years old girl, who cannot talk except several words only parent can understand and consistently moving & try to remove anything other people are holding in the hand or on table and tear papers into pieces

She was diagnosed as Autism when she was 2 years old. Her symptoms of inability to talk and constant movement, which involves taking away, any papers on table & try to tear it into pieces. She never improved but tearing paper became worse since she has strong hand force when she became bigger. Her Acetylcholine was 0.5ng on both sides of brain, which was extremely low. The top picture show while she was putting her head down, we placed a white rope to indicate that HPV-16 & HPV-18 positive areas only existed triangle area formed between this 2 white ropes on the top of her head. HPV-16 & HPV-18 was only detected on the top center of the head on this triangle space at only part of head covered by black hair. HPV-16 & HPV-18 were not detected at forehead where there is no hair. Oncogene C-fosAb2 is 0.25ng, indicating no significant malignancy but there is very early stage of insignificant pre-cancer. Bone Marrow representation areas with BDORT of (-)12 indicates possible existence of bone marrow related malignancy. We detect early stage of Non-Hodgkin's Lymphoma (-)7.



R-Pupil	Substance or Test	L-Pupil
0.5ng	Acetylcholine	0.5ng
7.5ng	β-Amyloid (1-42)	7.5ng
0.125ng	Apo E4	0.125ng
0.075ng	DHEA	0.075ng
0.5ng	Serotonin	0.5ng
0.5ng	Dopamine	0.5ng
0.5ng	GABA	0.5ng
0.025mg	Asbestos (Chrysotile)	0.025mg
0.3mg	Titanium Dioxide	0.3mg
+10	BDORT	+10
0.25ng	Oncogene C-fosAb2	0.25ng
2.5mg	Al	2.5mg
0.5mg	Hg	0.5mg
625ng	HPV-16	625ng
650ng	HPV-18	650ng
1300ng	CMV	1300ng
50ng	Mycobacterium TB	50ng
0.5pg	1α, $25(OH)_2Vit.D_3$	0.5pg

Figure 8: 15 years old girl. Table is the result of non-invasive measurement of various neurotransmitters & Pathogenic factors detected from both pupils.

Al was increased very significantly to 2.5mg. 1 hour before this measurement brain

Acetylcholine was 0.25mg & β-Amyloid (1-42) was 8ng & HPV-16 & HPV-18 were at least 40% higher and BDORT was (-)10 at both sides of brain but these values changed after 30 minutes application of small round electromagnetic field neutralizer on the bone marrow representation areas between eyebrow & upper eyelids. Large amount of HPV-16 & HPV-18 & β-Amyloid (1-42) were excreted in her urine 30 minutes after application of Electromagnetic field neutralizer & Acetylcholine increased to 2 times & β-Amyloid (1-42) reduced to 6.5ng from 8.5ng & BDORT increased from (-)10 at both sides of brain to (+) 10.

Discussion

In this examination of eight patient's pupils as well as brains who were diagnosed with or were suspected of having Autism, the characteristic abnormal findings expressed in BDORT units are:

1. Acetylcholine is markedly reduced to less than 1ng
2. Alzheimer's disease markers are increased to range of Alzheimer's disease in both adult Alzheimer's patients & Autism children:
    a. β-Amyloid (1-42) reaches 7.5ng or higher
    b. Tau protein has similar increase as β-Amyloid (1-42);
    c. Apo E4 increases to over 0.4ng.
3. DHEA is extremely reduced to less than 1ng in both Alzheimer's and Autism patients
4. Chrysotile Asbestos is increased significantly to 0.01ng or higher in both Autism & Alzheimer's disease through following 3 possible causes:
    a. Asbestos from water;
    b. Asbestos from air;
    c. Asbestos from food.
5. Titanium Dioxide (TiO_2) is moderately increased in both Alzheimer's patients & Autism children
6. Aluminum & Mercury are often increased
7. Vitamin D_3 deficiency often exists when there is coexistence of extremely low amount of Acetylcholine of less than 1ng & DHEA of less than 1ng
8. Dopamine, Serotonin, GABA are abnormally reduced to level of 0.5ng which is about 1/10 of normal value
9. Viral & bacterial infections frequently coexist, particularly when there is a HPV-16 & HPV-18 coexists in upper forehead central area forming triangle & base of triangle corresponds to the forehead hairline, peak of triangle corresponds to midline of the brain. When this happens, the Autism patient also has additional difficulty of severe neuromuscular problem, like spastic foot, which lasts many years & difficult to treat in the past since the causes were unknown

Previously many of these changes are not able to measure due to technical limitations, but U.S. Patented non-invasive diagnostic method make the measurement possible. Once these pathogenic causes become known, by removing these causes we can treat Autism patients more effectively. However, for both Alzheimer's patients & Autism patients, if proper treatment is not given, within maximum of 3-4 years from the onset of the

symptoms, there seems to develop permanent damages of brain since our experience shows that we can significantly reduce abnormally increased Alzheimer's markers & increase Acetylcholine, but corresponding improvement is insignificant. Although we can induce some symptomatic improvement, it is not very significant.

Question is where all this Chrysotile Asbestos, Titanium Dioxide, Aluminum & Mercury are coming from. Among several different types of Asbestos, Chrysotile Asbestos is the most common Asbestos found in the world and can get into our body 1) through water; 2) through Asbestos containing food; 3) through air. According to Environmental Protection Agency (EPA), you have to be able to identify the presence of Asbestos crystal fiber & most of the water if you examine by microscope, you can rarely see crystal fiber of Asbestos because it is heavier than water. However, when crystal size is less than 0. 1μm, often sharp crystal structure is lost and cannot be identified.

Therefore, most of the sold bottled water don't have detectable amount of crystal fibers of Asbestos. As a result, they consider water has no Asbestos. We found some of the bottled water does not have a visible crystal structure of Asbestos. But in some of them, we can find minute fragments of Asbestos less than 0.1μm without visible Chrystal structures under high magnification, including some of the well-known company's bottled water. Also, somebody living near Asbestos mine, there is high possibility that water contains Asbestos.

Asbestos from air is very common because some of ceiling materials or wall materials contain Asbestos. If there are any damage in Asbestos contained ceiling or wall, Asbestos will continuously falling into the room. Whoever is working or living in the room will inhale Asbestos everyday.

Third possibility is to get Asbestos in the food. We found Asbestos from many "Egg Yolk" but not in egg white and often "Almond Nuts" contains Asbestos. Unfortunately, current concept of nutrition has been teaching "Almond Nuts" is the most desirable food with high nutritional value. Many of the almonds sold in the store as well as in chocolate, they contain Asbestos. This almond's Asbestos was found accidently in one of the uterus cancer patient, when we succeeded to reduce Asbestos from cancer tissue. But before she left home after 3-day weekend conference in New York, the Asbestos level became high again. We found only thing she ate that morning was "Almond Nuts". When we examined remaining "Almond Nuts", we found they contain toxic Asbestos. However, "Almond Nuts" are considered to be most nutritional food and is encouraged to eat. Nobody suspected "Almond Nuts" contained Asbestos & even "Almond Milk" is sold which often has very strong (-) value of BDORT of (-)12 and potentially very toxic. Therefore, there is a lot of possibility of getting Asbestos into human body. However, Asbestos is highly toxic to human body. Our non-invasive U.S. Patented technique shows strong negative response for Asbestos. Other common source from food is "Egg Yolk". Many "Egg Yolk" contains Chrysotile Asbestos while egg white does not contain Asbestos.

We recently found Titanium Dioxide in both milk & "Egg Yolk". But the problem is anything containing Titanium Dioxide is by itself seems to be non-toxic. Therefore, it is not easy to prevent taking it. But it seems to create some problem when it accumulates in the brain with Asbestos & Al or Hg. Although TiO_2 by itself, it may not be toxic.

Concerning Aluminum, many people are still taking Aluminum through cooking pan made of Aluminum. Onetime, when the first author examined an Alzheimer's disease patient, & found Aluminum is very high in the brain. For curiosity, we examined Aluminum in 1st author's brain & found very high amount of Aluminum on both sides of brain since he has been using mainly Aluminum cooking pot. Therefore, he completely stopped using Aluminum cooking pan for cooking and boiling water. After a few weeks, his Aluminum in brain went back to normal level by taking optimal dose of Cilantro tablet. Another source of Aluminum is baby powder. Some old medication contains Aluminum hydroxide as anti-acids, phosphate binders used for Erosive Esophagitis, Stomach Ulcer, Duodenal Ulcer & Hyperphosphatemia. Also, many vaccines used contain aluminum.

Concerning Mercury, main source of Mercury in human is dental amalgam. About 50% of dental amalgam consists of Mercury. Therefore, if somebody has many teeth with amalgam filling & if they drink hot water, hot tea, hot coffee, hot soup, or anything hot, amalgam evaporate as gas & enter into lung & go to blood circulation & get into brain. Some of Mercury vapor may get into brain from nose although this is small possibility. Therefore if mother of the child has many amalgam in the month. There is a possibility of increasing Mercury in the brain of baby.

Concerning Vitamin D_3 deficiency, most important treatment is to use individualized optimal dose. Unfortunately, many people in Canada & USA started using Vitamin D_3 anywhere between 2000~5000IU as optimal dose. However, our study indicated that optimal dose of Vitamin D_3 for average adult is about 400IU. Most of ASD children & Alzheimer's Disease patients in adults have Vitamin D_3 deficiency.

According to the current concept of estimating amount of the medicine for children or old adult is mainly based on the concept that the amount should be proportional to body weight. However, according to our study, we found it is not proportional to the body weight, but it must be individually determined. In general, children with higher activity and higher metabolism, we require higher amount than proportional amount to their weights. For adult over 70 years old, their physical activity & metabolic rate is significantly reduced. As a result, if we give regular adult amount, it often becomes toxic overdose.

Also, for the problem of decreased Serotonin, Dopamine & GABA, if simply supplementing without treating cause, it is undesirable. By improving circulation of entire body, it can often increase without supplement. But before treating anything, first step we have to take is eliminating Vitamin D_3 deficiency by individualized optimal of D_3 or DHEA.

One of the reasons many of what we discovered non-invasively without opening skull is not commonly available even in major university hospitals since measurement of various molecules in brain must be done without biopsying the brain. In addition, Asbestos is not water-soluble; as a consequence, no blood test was developed up to present. One simple way to detect Asbestos is to use high power microscopic (x1000~1500) or electron microscopic magnification of the tissue or blood. But when Asbestos becomes small piece of less than 0.1μm, it is invisible & crystal structure can no longer be recognized because sharp edge of crystal fiber will disappear. Therefore, even electron microscope is very difficult to identify crystal structure in small asbestos particle of less 0.1μm. But by using strong Electromagnetic Field Resonance phenomenon between 2 identical substances with same weight, we can non-invasively measure most substances including various neurotransmitters Asbestos & TiO_2 without opening the head. We teach this U.S. Patented method to those seriously interested qualified medical doctors & dentists during 3 days weekend courses given at different parts of the world.

Based on these findings, we are now not only detect abnormal pathogenic factors but also able to treat unique each patient's abnormal conditions by solving each one of the causes of problems. However, before any treatment is given, Vitamin D_3 is the most essential treatment. Vitamin D_3 can be obtained either by conversion of cholesterol to pre-Vitamin D_3 by exposure of skin to sunlight or through external supplement such as mushrooms or Vitamin D_3. Without solving Vitamin D_3 deficiency, any treatments become less effective including any cancer treatment. However, large amount of Vitamin C including one cup of orange juice will completely inhibit Vitamin D_3 & garlic, spinach, etc. can also inhibit Vitamin D_3 effects. In addition, this optimal dose of Vitamin D_3 has an additional advantage of removing viral, bacterial & fungal infections as well as metals & toxic substances by urinary excretion. However, optimal Vitamin D_3 will not solve Vitamin D_3 deficiency if the patient has a liver & kidney problem because Vitamin D_3 has to be converted to $25(OH)D_3$ at liver and then it has to again be converted to 1α, $25(OH)_2$Vit.D3, at normally functioning kidney. So-called D_3 receptors existing in every organ of our body & cannot be stimulated if both liver & kidney cannot make active form of Vitamin D_3 stimulant 1α, $25(OH)_2$Vit.D3. To solve this problem, we have to use optimal dose of DHEA. But both optimal dose of Vitamin D_3 and DHEA commonly used in USA are usually highly overdosed 2000 IU-5000 IU or even higher dose, which is highly toxic and carcinogenic well as increased cancer promoting effect.

Recently, our preliminary results indicate that optimal dose of one type of amino-acid, "Taurine" (a type of amino-acid also known as 2-aminoethanesulfonic acid, which has a slightly different structure than regular amino acids by replacing carboxyl group COOH with Sulfur group) of about 200 mg for average adult has similar effect as that of vitamin D3 on every important internal organ, including heart, brain, liver, kidneys, pancreas, etc., and various cancers. Unfortunately, toxic overdose of 500 mg or higher is commonly used. This overdose is not only toxic, but it also inhibits optimal dose of vitamin D3. Also, we found that combination of optimal dose of vitamin D3 and optimal dose of Taurine has better results than that of each one of them used alone and has better anti-cancer effect as well. We also found that Taurine increases acetylcholine, and the increase is even more significant when Taurine is combined with vitamin D3[78,82]. We

are currently evaluating the benefits of Taurine and a combination of Taurine and vitamin D3 on Autism, Alzheimer's and other brain disorders and will report our results in the future In that regards, to individually identify optimal dose, our simple non-invasive U.S. Patented method becomes invaluable.

Conclusion

Autism Spectrum Disorder patients characteristically show poor socialization skills which include the inability to communicate in a friendly manner, lack of eye contact, difficulty in talking, isolation from group activities, & repetitive isolated activity. By the use of a non-invasive electromagnetic field resonance evaluation method between two identical molecules, through both pupils & head, we found the following important information, which has not been discussed in the past:

1. Acetylcholine in the brain is markedly reduced;
2. Alzheimer's disease markers, including β-Amyloid (1-42), Tau protein & Apo E4 are increased to the level of Alzheimer's disease in adults;
3. DHEA level is extremely reduced;
4. Chrysotile Asbestos is increased significantly;
5. Titanium Dioxide (TiO_2) is moderately increased;
6. Aluminum & Mercury are very often increased;
7. Vitamin D_3 deficiency often exists when there is coexistence of extremely low amount of Acetylcholine & DHEA;
8. Dopamine, Serotonin, GABA are abnormally reduced to level of about 1/10 of normal value;
9. Viral & bacterial infections frequently coexist when there is a HPV-16 & HPV-18 coexists in triangular upper forehead central area; often patient has difficulty of talking, mental retardation & multi dysfunction of lower extremities;
10. Most of above-described findings are quite similar to Alzheimer's disease in adult.
11. If proper treatment is given before the first 3~4 years after recognition of symptoms, we can make significant improvements in most Autism patients. However, if proper treatment is not given for the first 3~4y, still we can improve all the abnormal findings significantly and prevent further worsening, but clinical improvement is not significant since there seems to be permanent damages established after 3~4 years from onset of Autism Spectrum Disorder (ASD). Also, a similar time limitation exists in Alzheimer's disease in adult.
12. It is a highly desirable to have early detection & treatment of the disease by the use of a non-invasive diagnostic method to eliminate the discussed abnormalities.

We hope this article will help many Autism & Alzheimer's patients.

Acknowledgement

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