

HEALING THE BRAIN NATURALLY

**Understanding and taking care of ADHD, ADD, behavioral disorders,
learning disorders, developmental delay and autism.**

Part 2

Nutrition, Metabolism and Toxicity

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Introduction

In the first part of this article, we have explored the neurological factors that cause learning, behavioral and developmental disorders.

We have discovered that all those disorders where the consequence of a delay in the development of one hemisphere of the brain compared to the other. This problem is called hemisphericity and it leads to a functional disconnection syndrome, or the inability for part of the brain to communicate optimally.

We have also discovered that this hemisphericity was caused by a sedentary lifestyle, spinal and postural distortions, various traumas, as well as numerous psychosocial factors.

We had briefly mentioned that those neurological imbalances could also be the consequence of nutritional deficiencies, metabolic imbalances, as well as other neurotoxic factors.

Whatever the causes, the brain is always involved and is the one who transform the underlying imbalances into the symptoms of those disorders. It is therefore essential to understand that it is far less important to give a name to the symptoms (e.g. "ADHD" or

"autism") than to understand the real underlying causes and imbalances.

In this second part, I would like to invite you to discover the different nutritional, metabolic and toxic factors that affect the brain of children with neurobehavioral disorders. But before to start, I would also like to bring to your attention that those imbalances can also be the result of the brain imbalance. Regardless of which one started first, a vicious circle has set in that is best addressed by correcting both the "body imbalances" and the "brain imbalances."

We will look at those different causes by separating them into two categories: **antecedents and triggers.**

Antecedents are risk factors that begin during conception, prenatal phase and infancy. They predispose the individual to the triggers.

Triggers are physical or metabolic factors that get added to a weakened physiology (due to antecedents) to affect the function of the brain and trigger the symptoms of the various disorders.

The various symptoms the individual will experience are therefore determined by a

combination of genetic factors, antecedents, triggers, neurological imbalances and brain hemisphericity.

For example, two children with the same neurological lesion can have completely different symptoms according to the antecedents, triggers and brain hemisphericity that affect them.

Later in this article, we will explore the various diagnostic methods that we can use to test for antecedents and triggers, as well as the natural approaches that we can use to correct those problems.

ANTECEDENTS

Antecedents can be either genetics or acquired (environmental factors). It is important to mention that some environmental factors may affect the fetus right after conception (or even before) and it is therefore sometimes difficult to differentiate them from genetic factors.

Genetic factors

Neurobehavioral disorders have a genetic component. For example, 40% of children with learning disorders have a family member who suffered from the same problems. Although there is no single gene that causes these problems, several genes have been linked to a higher risk for developing those disorders. One of the most studied is a gene that encodes for dopamine receptors which can lead to an insensitivity of dopamine receptors to that neurotransmitter or to an increase re-uptake of dopamine.

Environmental neurotoxins

It is a well-known scientific fact that many toxic substances can pass from the mother to the fetus and affect the latter in a negative way. If the mother is exposed to toxins during pregnancy or if she had an accumulation of those toxins in her tissues before getting pregnant, those toxins can affect the proper neurological development of the fetus in-utero and after birth. Heavy metals, solvents, pesticides, tobacco, alcohol, medications and street drugs are amongst the most frequent

and most studied toxins. For example, several toxins have been associated with a higher risk of developing ADHD. Smoking cigarettes or drinking alcohol during pregnancy has been associated with a doubling to tripling of the risk of having an ADHD child. One study has estimated that 25% of all behavioral disorders can be attributed to the use of tobacco during pregnancy.

Another acquired antecedent is a chronic exposure to low levels of lead. In the U.S, 20% of children suffer from intoxication to lead. Other heavy metals such as mercury (from amalgam fillings and vaccines), cadmium and aluminum also play a role in neurodevelopmental disorders. In one study, 100% of autistic children tested positive to heavy metal toxins.

Essential fatty acids deficiency

Essential fatty acids (EFAs) are fat molecules that cannot be produced by the body and must therefore be consumed in our diet. Some EFAs, such as the omega-3 DHA, play a crucial role in the development of the fetal brain. Several studies have shown a relationship between omega-6 and omega-3 deficiencies and ADHD and learning disorders. A proper ratio between omega-6 and omega-3 is also crucial for the brain to work optimally. EFA deficiencies not only affect the brain directly, they also affect it indirectly by increasing the brain sensitivity to several neurotoxins.

Several studies have shown that children who were bottle-fed had twice the risk of developing ADHD compared to children who were breast-fed. This was due to a deficiency of DHA in artificial milk.

EFAs deficiencies also increase the risk of developing food allergies, which is one of the triggers we will talk about in a little bit.

“Trans” fatty acids are fats that are altered by heating or the hydrogenation process (a method that adds hydrogen to oil to make it solid at room temperature) and that can be found in mayonnaise, margarine, pastries, fries and other industrial food preparations. They have been found to have a toxic effect

on our nervous system and to induce the equivalent of deficiencies in good EFAs.

Vitamins, minerals and amino acids

Essential fatty acids are not the only nutriment which have been shown to be deficient in children with neurobehavioral disorders. Several studies have shown that magnesium, zinc, iron, vitamin B1 and vitamin B6 are also often deficient. In fact, one study found that 95% of children with ADHD were deficient in magnesium.

In the first part of this article, we have explored the important role of neurotransmitters – such as dopamine – in brain function. Neurotransmitters are chemical molecules that are made from amino acids. Amino acids are little building blocks that come from complete protein digestion. Adequate daily consumption of amino acids (by eating sufficient proteins) and proper protein digestion are therefore two critical factors in the production of neurotransmitters. For example, one study has revealed that children suffering from ADD were deficient in five types of amino acids, two of which are the direct precursors for dopamine and serotonin, two of the most important brain neurotransmitters.

Sugars also play an important role. A diet rich in refined carbohydrate has been associated with poorer cognitive performance in children. And some children are hypersensitive to sugary products.

TRIGGERS

Allergies, food intolerance and gastrointestinal function

Several studies have shown a link between ADHD and “atopic diseases”, such as asthma, eczema, allergies and food allergies. One study has even shown that when ADHD children ate a food they were allergic to, their brain wave pattern was altered. Moreover, food allergies and intolerances are associated with an increase risk of developing ear infections, which is itself a risk factor for ADHD.

Several well-designed scientific studies have shown that hypoallergenic or elimination diet had many benefits for children with ADHD. In fact, it has been shown that up to 75% of ADHD children benefit from elimination diets.

Several mechanisms can explain the short-term and long-term impact of allergies and intolerances on brain functions. Food allergies trigger the release of inflammatory molecules such as histamine and type 2 prostaglandins. Those two substances have a negative effect on blood flow to the brain. Some studies have also shown that some neuroactive peptides coming from the diet play a role in the etiology of autism and other neurobehavioral disorders. Those peptides – who have an opioid activity, meaning they work like morphine and are neurotoxic – are found especially in casein, which is the protein of dairy products, as well as in gluten, which is the protein from wheat. This is why a casein-free and gluten-free diet is so powerful to help our children heal naturally.

Food allergies and intolerances also have an indirect effect on our brain by affecting our gut function. Allergenic molecules create gut inflammation which affects our digestion and proper absorption of vital nutrients. Once the gut lining is inflamed, our gut becomes “leaky”. This means that it lets in substances that should have been prevented from entering our gut lining. Undigested particles enter our bloodstream, causing further allergic reactions that end-up weakening our blood-brain barrier. This makes it more likely for toxins to enter our brain. One Canadian study has shown that 74% of children with ADHD had increased gut permeability, aka “leaky gut”.

Intestinal Flora

Antibiotics are an important cause of leaky gut. Many children with ADHD have received multiple courses of antibiotics to treat ear infections.

The intestinal flora plays a crucial role in the proper maintenance of the gut lining. Moreover, good and friendly bacteria (probiotics), are our first line of defense against invaders. One study has found that

46% of children with ADHD were deficient in Lactobacilli and Bifidobacteria, the two most important friendly bacteria in our intestinal flora. They have also been found to be deficient in IgA, a molecule that helps create a barrier against invaders. A balanced gut flora helps decrease the risk of food intolerances, neutralizes microbial and cancer-producing toxins and prevents the overgrowth of bad bacteria.

An imbalance in our intestinal flora leads to an overgrowth of bad bacteria. In functional medicine, we call that a “dysbiosis”. Those bad bacteria produce lots of toxic substances (such as ethanol and methane) which have been linked to various neurobehavioral disorders.

Dysbiosis is not only characterized by an imbalanced gut flora, but also by the presence of undesirable micro-organisms that can potentially create diseases. One study found that 41% of children with ADHD had parasites, while 31% were affected by an overgrowth of the yeast *Candida Albicans*. Those micro-organisms produce metabolites that are known to affect our brain and immune system.

Food additives and phosphates

The life works of Dr. Benjamin Feingold, a famous American pediatrician and allergologist, and of Herta Hafer, a German pharmacist, have shown that many children were not only allergic or intolerant to foods, but also to food additives and phosphates. For a long time, there has been a lot of controversy about the role of food additives in ADHD, but, in 2007, a study published in the prestigious medical journal *Lancet* confirmed the link. The work of Dr. Doris Rapp, a medical doctor specializing in environmental medicine has shown that a child may not only be sensitive to what he eats, but also to what he is exposed to, such as perfumes, after-shave, cleaning products, paints or even second-hand smoke.

Physiologically, those sensitivities trigger allergic and inflammatory reactions that affect our brain and immune system, leading to symptoms or to aggravation of symptoms of neurobehavioral disorders.

Immune impairments

Several scientific studies have suggested that our children suffer from subtle immune impairments that can participate in causing the symptoms of ADHD and autism. One study has shown that children with ADHD had abnormal humoral and cellular immune function, while another revealed they had lower levels of complements (molecules related to immune function). One study even found antineural antibodies in their blood and cerebrospinal fluid, suggesting that the immune system of children with ADHD start attacking its own nervous system.

DIAGNOSTIC

Diagnosing antecedents – Toxicity testing

The first suspicion of toxic exposure is usually revealed in the health history. Maternal exposure to or consumption of medications, drugs, alcohol or cigarettes need to be discussed. We also need to look for potential exposure to environmental toxins such as in paints, solvents, vaccines and amalgam fillings.

Several laboratory tests using hair analysis, saliva, stools, urine or blood can be used to measure levels of heavy metals (aluminum, lead, mercury, cadmium and other toxins). A liver detoxification profile can be ordered to know whether the liver is able to detoxify properly. Some more advanced testing can be used to ascertain whether the individual have a genetic weakness in his or her detoxification pathways.

In some instances, we can also use applied kinesiology muscle testing to individualize the diagnostic process.

Diagnosing antecedents – nutritional status

We start our evaluation of nutritional status with a diet diary. You will write down everything that you eat and drink for 7 to 14 days. We then evaluate your eating habits to determine potential deficiencies and excesses. We can then complement with laboratory testing of hair, urine, blood or red blood cell to measure levels of various nutrients such as

vitamins, minerals, amino acids and essential fatty acids.

Diagnosing Triggers – gastrointestinal function evaluation

Gastro-intestinal triggers can be divided into several categories:

- increase in gut permeability (leaky gut)
- malabsorption
- digestive deficiency
- hypochlorhydria (reduced production of stomach acid)
- alteration of oral, gastric and intestinal flora
- food allergies and intolerances
- liver detoxification impairments

All those factors can be caused by the use of antibiotics, alcohol consumption, smoking or even the slightest use of anti-inflammatory medications.

Several laboratory tests can help us assess gastro-intestinal function. The first one is gut permeability testing which allow us to know whether the gut lining is performing its filter function or whether it has become leaky. The second one is called Comprehensive Digestive Stool Analysis. This exam measures your digestion, absorption, gut flora and intestinal immunity status. It also checks for the presence of bad bacteria, yeasts and fungi and parasites.

Diagnosing Triggers – food allergies and intolerances

Your medical doctor has usually only tested you for “medical” allergies. He has only looked at one of the many reactions that your body can have to foods. We need to know if you suffer from hidden, delayed allergic reactions or food intolerances. Applied kinesiology muscle testing and various laboratory tests can be used to unveil hidden food sensitivities. We can also use a diet diary, combined with a food elimination diet. We eliminate “usual suspect” foods for 2-3 weeks, see how you feel and function, and then re-introduce one by one to see whether they trigger symptoms.

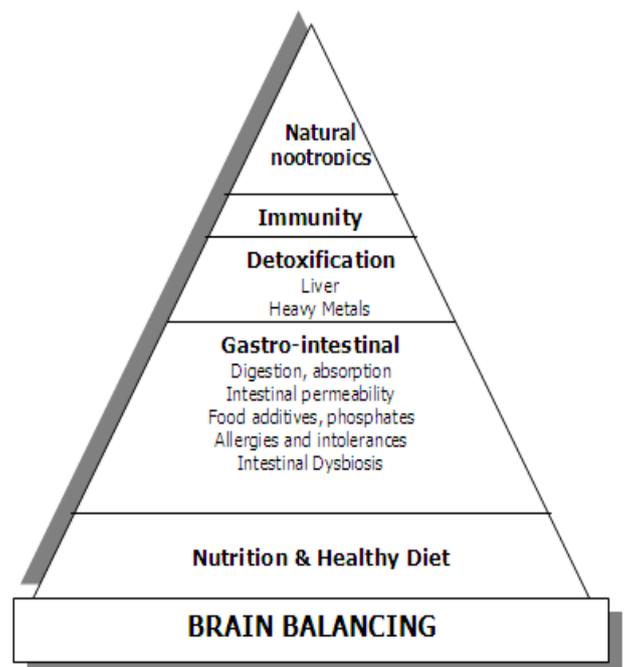
AN INTEGRATIVE APPROACH TO MANAGEMENT

In order to help you or your child start overcoming neurobehavioral disorders naturally, we will need to work on balancing your brain and your body. Balancing brain hemisphericity is crucial to the process and is the key to get the amazing results that we get, even when other approaches have failed.

Our unique approach allows us to manage behavioral, learning and developmental disorders in an organized, structured, step-by-step manner.

Nutritional, metabolic and neurotoxic balancing interventions complement our brain-balancing protocol. We will first help you create a healthy diet for your child and your family. Then we will work with natural intervention to balance all metabolic glitches in your body and brain. Our protocol can be summarized in our Brain Wellness pyramid:

The Brain Wellness Pyramid



The Brain Wellness Pyramid gives us a clear, organized, step-by-step path to help you overcome neurobehavioral disorders naturally.

Nutrition and Healthy Diet

Our nutritional protocol will give you the opportunity to create a healthy diet for the whole family and to take care of the various deficiencies that your child may be suffering from. We focus specifically on enhancing brain function and protecting against neurotoxicity. Our nutritional program addresses the issues of essential fatty acid; elimination of “trans” fats; consumption of antioxidant-rich foods, as well as of nutriments which boost energy production and enhance supply of important vitamins, minerals and amino acids; elimination of junk foods; and balancing of blood sugar.

Healing the Gut

Our approach to healing the gut is based on a unique “gastro-intestinal rehabilitation” protocol created by medical doctors from the Functional Medicine Institute in Gig Harbor, Washington. This program is known as the “4-R Program”.

First “R” – Remove

The first step is all about eliminating undesirable bacteria and parasites that plague your gut. We can eliminate them by using natural herbs and herbal remedies that have antimicrobial properties, such as specific spices (garlic, oregano, or clove) or other herbs such as *Artemisia annua* (wormwood), *Hydrastis Canadensis* (goldenseal) or grapefruit seed extracts.

This step also includes the elimination of all foods and substances that can potentially cause allergies, intolerances or sensitivities. We use a combination of the following diets:

- Elimination or hypoallergenic diet
- Feingold diet (food additives and salicylates elimination)
- Phosphate-free diet (Herta Hafer)
- Casein-free, gluten-free diet
- Acylamides reduction diet

Second “R” – Replace

In this second step, we will be balancing the factors that affect proper digestion and gastro-intestinal absorption. Partial or incomplete digestion of proteins is an important source of food allergies. If needed, we will supplement your diet with digestive enzymes and other supplements designed to boost digestive juices production.

Third “R” – Reinoculate

In this step, we will work on rebalancing your normal intestinal flora. We use high-potency probiotics supplements that contain *Lactobacilli*, *Bifidobacteria* and other species of good bacteria to help repopulate your deficient gut flora.

In some cases, we will also be using natural substances called probiotics. They help feed the good bacteria and support their growth and development. Fructooligosaccharides and inulin are two of the most well-known probiotics.

Fourth “R” – Repair

This last and final step is designed to help restore the gut lining and gut mucosal integrity. We will be using several natural substances that have been shown to heal a leaky gut, such as the amino acid L-glutamine (which is also the most important source of energy for cells of the gut lining), vitamins C, B5, E and A, as well as essential fatty acids such as omega-3s. By repairing the gut lining, you will be able to absorb optimally again important vitamins and minerals.

Healing the immune system

Several strategies will help us balance and heal your immune system. For example:

- Diminishing the allergenic load – i.e. reducing food allergies and intolerances, which we have already done in step 1 of healing the gut.

- Optimizing nutrition to your needs by improving diet and ensuring proper supply of antioxidants such as essential fatty acids, vitamins A,E, and D, magnesium, zinc and selenium.
- If needed, using specific natural immuno-stimulant substances such as certain Japanese mushrooms or Echinacea.

A regular, moderate physical activity will also go a long way to help you or your child balance immune function.

Detoxifying the brain and body

The first step to proper detoxification is ensuring that you stop being exposed to what causes the toxicity in the first place. It is therefore fundamental to find the sources of exposure and eliminate them. In some cases, amalgam fillings will need to be removed.

The second step is to support the natural detoxification of the body by ensuring proper function of your intestines, your kidneys, and especially your liver. We can do that by using specific nutritional and supplement formulation.

In some cases, we can also use heat (therapeutic sauna) and foot bath detoxification.

For severe cases, we may need to consider doing some chelation, which is the use of artificial substances to “pull” the toxins out of your body. This approach is a bit more risky, and in case you require it, we will refer you to a medical doctor specializing in chelation therapy.

Natural nootropic substances

Nootropics are natural substances that can improve cognitive function. We only use those in rare cases where the rest of the protocol has not yet brought all the results that we would like to see. For example, one small study done in Canada on children with ADHD showed that a combination of Ginseng and Gingko biloba extracts help decrease

symptoms in 80% of children without any side-effects.

Several studies have shown that Ginseng and its active substance, ginsenoid, had beneficial effect on immune function, anti-inflammatory properties, improved resistance to stress, and help normalize sleep cycle. Ginseng extract has also been shown to improve learning and memory, as well as (in animal studies) boost the production of dopamine in the brain.

Gingko biloba has a powerful antioxidant effect on the brain, protects the DNA of mitochondria (which are small “energy plants” in the cells), has a neuroprotective effect, boosts memory and improve cognitive functions.

Other natural nootropics may also be recommended such as some Chinese and Ayurvedic herbs.

Contact info@bodyelementspdx.com or call (503) 477-6322 for more information!



Dr. Marina Zarè has a Doctorate of Chiropractic degree from University of Western States and a successful practice in Portland, Oregon. Dr. Marina spent many years as an electrical engineer working for high-tech companies like Intel before changing careers so she could dedicate her life to the health of children and their families. Dr. Marina is most passionate about helping kids be as healthy as they can so they can reach his or her full brain potential and live a normal life. She enjoys a hands on approach to helping people live up to their fullest potential.