Methylation Overview and Explanation

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The term methylation describes a biochemical process that is utilized in the body for transport of nutrients, energy production and in gene modulation. In patients with decreased methylation activity (i.e. methylation deficiency), there are significant shortcomings in the ability to execute a variety of important chemical functions in the body. These shortcomings can leave the body unprotected from the everyday assault of environmental and infectious agents, sluggish in neurotransmitter production and slow to recover from inflammatory damage. This shortfall can result in a wide range of medical conditions including neurological issues, such as seizures, migraines, dizziness, depression, anxiety, OCD, ADD/ADHD, developmental delay, autism, dementias and memory issues, chronic persistent infections, auto-immune disease, neural tube defects, infertility and pregnancy complications. Appropriate supplementation with the proper methylated vitamins and nutrients will bypass the genetic and acquired deficits and restore appropriate function of the pathway resulting in improvement in complicated syndromes.

The proper functioning of the methylation cycle is essential for a number of critical reactions in the body. Consequences of genetic weaknesses (mutations) in this pathway are increased risk factors leading to a number of serious health conditions. A central pathway in the body that is particularly amendable to bio-molecular genetic weaknesses is the methionine/folate pathway. There are several sites in this pathway where blocks can occur as a result of genetic differences. In general, single biomarkers are identified as indicators for specific disease states. However, it is possible that for a number of health conditions, including autism and other severe neurological syndromes, it may be necessary to look at the entire methylation pathway as “a biomarker” for underlying genetic susceptibility for a disease state. It may require expanding the view of a “biomarker” beyond the restriction of a mutation in a single gene to a mutation somewhere in an entire pathway of interconnected function.

This does not mean that every individual with mutations in this pathway will have one of the health conditions listed above. It may be a necessary element, but there may not be a sufficient environmental or infectious “trigger”. Most health conditions in society today are multifactorial in nature. In essence, there is an underlying genetically determined risk that requires a significant infectious or environmental “trigger” to initiate the process.