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METHYLATION

By Robin A. Bernhoft, M.D., F.A.C.S., D.A.B.E.M., F.A.A.E.M.

There is a great deal written about methylation. Several prominent practitioners treat methylation as if it were the full explanation of normal or abnormal biochemistry – the ultimate source of disease. Unfortunately, life is more complicated than that.

Don't get me wrong: methylation is important. It is involved in regulating DNA expression and energy production (both via the Krebs Cycle and also through the synthesis of energy hardware like carnitine and CoQ10). But it is not the whole story. Some practitioners attribute all sorts of clinical symptoms to MTHFR abnormalities, for example, which can only be partially explained by looking at MTHFR. MTHFR defects may aggravate the impact of other genetic abnormalities, but will not generate those impacts all by itself. Looking at MTHFR in isolation without taking the other abnormalities into account explains very little.

To solve real clinical patient problems you have to look at the whole picture, not just treat part of it.

Looking at the whole picture involves (at a minimum) analyzing the genes for enzymes, which clear common chemicals and metals, hormones, neurotransmitters, etc. Abnormalities of these other systems usually require treatment in their own right, independent of what is done about MTHFR.

Which raises another common misconception: so-called hypermethylation. In the medical research literature, hypermethylation refers to errors in regulation at the level of the DNA molecule. It is not a clinical condition. Some practitioners claim that patients become agitated or have other adverse reactions due to excessive doses of methyl groups – that they are "intolerant" of or "sensitive" to methyl groups. (That they are suffering from "hypermethylation.") While this syndrome exists, in my opinion it is not due to an excess of methyl groups as such, nor to any sort of intolerance, but rather to an imbalance between Phase One and Phase Two detoxification.

The increased energy which is generated by therapeutic doses of methyl groups fires up Phase One much more quickly than it does Phase Two. Phase One products are often more toxic than the parent compounds, and if Phase One starts generating toxic products which a sluggish Phase Two is not yet ready to get rid of, you feel terrible. Agitated, sick, worse symptoms than you started with. So you have to go slowly.

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We get around this problem by starting methyl groups at low doses, and slowly increasing them as tolerated, giving Phase Two a chance to catch up with Phase One, after which high doses are tolerated quite happily, without any signs of sensitivity or intolerance. At that point, detoxification runs efficiently and many symptoms begin to improve.