MTHFR, DNA Analysis

Result: NEGATIVE (No mutation identified)

Interpretation:
The MTHFR C677T and A1298C variants were not identified. While the individual does not possess either of these factors, other risk factors may be detected through systematic clinical laboratory analysis. Hyperhomocysteinemia may occur due to mutations in enzymes other than MTHFR that are involved in homocysteine metabolism, or arise due to acquired factors such as folate, vitamin B6 or vitamin B12 deficiency. Therefore, this individual's MTHFR result does not guarantee a normal homocysteine level. In the evaluation of vascular and obstetric risk, consider measuring fasting homocysteine.

Additional Information:
Methylenetetrahydrofololate reductase (MTHFR) is a key enzyme in the folate pathway and is responsible for the metabolism of homocysteine. There are two common variants in the MTHFR gene, c.655c>T (p.Ala222Val), referred to as C677T, and c.1286A>C (p.Glu429Ala), referred to as A1298C. Individuals homozygous for C677T (two copies of the variant), have decreased activity of the MTHFR enzyme and a predisposition to hyperhomocysteinemia, particularly when deficient in folate. Hyperhomocysteinemia is a risk factor for venous thrombosis and coronary artery disease and is associated with an increased risk of fetal open neural tube defects. The C677T variant does not independently increase risk of these conditions in the absence of hyperhomocysteinemia. The A1298C variant is not associated with elevated homocysteine levels unless a C677T variant is also present; however, the clinical significance of heterozygosity for both C677T and A1298C is controversial. Population data suggest that these two variants are not present on the same chromosome, but rare exceptions have been reported of triple variant MTHFR genotypes (ie. homozygous for one variant and heterozygous for the other). Homozygosity for C677T has an estimated frequency of 10% to 15% in Caucasians and 25% in Hispanics.

Additional information:
Dietary folic acid, B6 and B12 supplementation has been suggested to lower homocysteine levels in some people. Folic acid supplementation has been shown to reduce the occurrence of neural tube defects. Genetic counselors are available for health care providers to discuss results at 1-800-345-GENE.
Methodology:
DNA analysis of the MTHFR gene was performed by PCR amplification followed by restriction analysis. The diagnostic sensitivity is >99% for both. Molecular-based testing is highly accurate, but as in any laboratory test, rare diagnostic errors may occur. All test results must be combined with clinical information for the most accurate interpretation.
This test was developed and its performance characteristics determined by LabCorp. It has not been cleared or approved by the Food and Drug Administration.

References:
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<td>1912 TW Alexander Drive, RTP, NC 27709-0150</td>
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