Discontinuation of Vitamin E Results in a Dramatic Increase in the Incidence of Myocardial Infarction and a Rapid Deterioration of HDL Function in Individuals with Diabetes Mellitus and the Hp 2-2 Genotype

Shany Blum [1], Uzi Milman [2], Chen Shapira [2], Levy Andrew [1]

[1] *Faculty of Medicine, Technion-Israel Institute of Technology,* [2] *Haifa and Western Galilee District, Clalit Health Services, Haifa, Israel*

Background: Individuals with Hp 2-2 genotype and DM have a 2-5 fold increased incidence of CVD compared to individuals without Hp 2-2 genotype. We have shown in the ICARE study that vitamin E decreased this incidence by 50% comparing placebo in Hp 2-2 DM patients, and this may be due to severe HDL dysfunction in these individuals.

Methods: We prospectively determined the incidence of MI in ICARE participants after vitamin E was discontinued. We assessed HDL function after treatment with vitamin E or placebo in a crossover design in Hp 2-2 DM individuals.

Results: In individuals treated in ICARE with vitamin E the incidence of MI increased dramatically in the period after ICARE was terminated and vitamin E withdrawn (0.4% on vit. E vs. 1.8% off vit. E, p=0.03). In the 15 month interval after ICARE was terminated the incidence of MI was not significantly different in individuals who had received vitamin E vs. placebo (1.8% former vit. E group vs. 1.7% former placebo group, p=0.9). HDL function was significantly improved in Hp 2-2 individuals by vitamin E. However, 2 months after vitamin E was withdrawn HDL function had deteriorated to its level of dysfunction prior to the initiation of vitamin E.

Conclusions: Discontinuation of vitamin E is associated with an abrupt increase in the incidence of MI and a deterioration of HDL function in Hp 2-2 DM individuals. These studies support the pharmacogenomic application of the Hp genotype to determine whether an individual with DM should receive vitamin E.