Does Measuring Genetic Variations at Chromosome 9p21.3 Help to Predict Cardiovascular Disease in Women?

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The full report is titled "Cardiovascular Disease Risk Prediction With and Without Knowledge of Genetic Variation at Chromosome 9p21.3." It is in the 20 January 2009 issue of *Annals of Internal Medicine* (volume 150, pages 65-72). The authors are N.P. Paynter, D.I. Chasman, J.E. Buring, D. Shiffman, N.R. Cook, and P.M. Ridker.

What is the problem and what is known about it so far?

Cardiovascular disease (which includes heart attacks and strokes) is a major cause of death. Traditional risk factors for cardiovascular disease include age; family history; cholesterol levels; diabetes; high blood pressure; smoking; and, more recently, C-reactive protein levels. Doctors can use equations based on these traditional risk factors to estimate the chances that a patient will develop cardiovascular disease. We have learned that genetic factors are also linked to a person's risk for cardiovascular disease. One such risk factor is genotype on chromosome 9 at location 9p21.3. It is unclear how much measuring genetic factors would improve the ability to predict the risk for cardiovascular disease. Genetic factors can be more complicated and expensive to measure than the traditional risk factors listed above.

Why did the researchers do this particular study?

To find out whether measuring genotype at chromosome 9p21.3 provides useful information about a person's risk for cardiovascular disease beyond measurement of traditional, easily available risk factors.

Who was studied?

22 129 white, female health care professionals who were participating in the Women's Genome Health Study.

How was the study done?

When the women enrolled in the study, the researchers collected information about traditional risk factors (including smoking history, family history of early cardiovascular disease, diabetes, blood pressure, and levels of cholesterol and C-reactive protein) and took blood samples to test for genotype at chromosome 9p21.3. The researchers then followed the women for several years to see who developed cardiovascular disease and predicted the risk for cardiovascular disease by using traditional risk factors alone and with the genetic information.

What did the researchers find?

The addition of the genetic information did not meaningfully improve prediction based on the traditional risk factors alone.

What were the limitations of the study?

The study included only white women, so the results might not apply to men or to people of different ethnic backgrounds.

What are the implications of the study?

At least in white women, the addition of information about genotype at chromosome 9p21.3 does not improve the ability to predict whether cardiovascular disease will develop compared with using only traditional risk factors.