Update to Soria et al.'s "F7 Gene and Clotting Factor VII Levels" (2005): Genetic Determinants of Quantitative Traits in Thrombotic Disease

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The last 10 years have produced revolutionary advances in the field of human genetics, allowing a transition from the classical analysis of monogenic disorders to a new emphasis on the genetic basis of common disorders, such as thromboembolic disease. Thromboembolic disease is one of the most important causes of morbidity and mortality in industrialized nations and of great public health importance because of its high social and economic cost. Thus identification and characterization of specific loci and genes and the associated phenotypes involved in thrombotic risk will contribute to a greater understanding of the pathogenesis of this disease and will ultimately lead to the development of better diagnostic, prevention, and treatment strategies.

Genetic Base of Thrombosis Disease

Thrombosis is a complex disease that results from the interaction of genetic and environmental factors. The additive effect of genes is responsible for 61% of the variability in the susceptibility to thrombotic disease (Souto et al. 2000b), documenting the importance of genetic factors that influence this condition. Thus, in this genomic era, the search for genes involved in complex diseases, such as thrombophilia, is gaining momentum, as is the debate over gene-finding strategies (Rosendaal 2003; Souto 2003).

To date, the vast majority of analyses of genetic factors in thrombotic risk have been based on population case-control studies to test for association between genetic variants in specific genes and risk of disease. Although such studies provide important indirect evidence of genetic effects, they have a number of statistical weaknesses. These problems illustrate how difficult it is to genetically dissect complex diseases, such as thrombosis, mainly because of the heterogeneity of the disease outcomes, in which multiple physiologic and metabolic pathways are

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