HEREDITARY DEFICIENCY OF ANTITHROMBIN III. E. Marciniak. Department of Medicine, University of Kentucky, Lexington, Kentucky, USA.

The recognition of biological importance of antithrombin III (AT III) stems from the description of a familial thrombotic tendency associated with reduced levels of this protein in blood. A limited number of such families has been reported in the literature. All of the affected members are heterozygous for the abnormal gene. In many, the quantity of AT III as evaluated by antigenic determinants correlates with the capacity of plasma to inactivate coagulation enzymes. Both the existence of genetic polymorphism and the prevalence of the trait are still open to speculation. Although low level of AT III is an important risk factor for the development of venous thromboembolism, it does not preclude longevity. Liver is the major source of AT III synthesis but little is otherwise known of its metabolism. Subjects with hereditary deficiency treated with coumadin often respond with a moderate increase in both AT III antigen and binding capacity. One can assume that this reflects a diminished rate of AT III utilization in vivo since the requirement for inhibitor apparently decreases with the reduction in procoagulants. More puzzling, however, is the fact that continuous intravenous treatment with heparin markedly diminishes the quantity of circulating AT III in man. This decrease is without proportion to the starting AT III level and a patient with congenital deficiency is at risk of attaining alarmingly low inhibitor level during therapy with heparin. Although the mechanism remains conjectural, the fact that heparin markedly lowers AT III in blood gives some new perspective to AT III metabolism.

PLATELET ANTITHROMBIN DEFICIENCY: A NEW CLINICAL ENTITY. J.L. Tullis and K. Watanabe. Department of Medicine, New England Deaconess Hospital, Boston, Massachusetts, U.S.A.

A kindred with a history of multiple thromboses was studied for coagulant abnormalities. A deficiency of plasma antithrombin III was found in approximately half of the 13 family members by either coagulant or immunologic assay. No clear relationship between plasma antithrombin III deficiency and a history of thrombosis was present. Platelet antithrombin assays were studied in the same family. Ten of the 13 members were deficient. None of the three who was normal had a history of thrombosis. The plasma antithrombin III assays could be influenced by heparin or coumarin treatment. The same medications were without consistent effect on platelet antithrombin. On the basis of these findings, it is proposed that familial hypercoagulability in some cases may be due to a platelet antithrombin deficiency and that the plasma antithrombin III deficiency is a secondary effect.