

A CLINICAL COMPARISON OF CHROMOGENIC, FLUOROMETRIC, AND NATURAL (FIBRINOGEN) SUBSTRATE ASSAYS FOR DETERMINATION OF ANTITHROMBIN-III. R.L. Bick and B.J. McClain. San Joaquin Hematology Oncology Medical Group, California Coagulation Laboratories, Bakersfield, California, and UCLA School of Medicine, Los Angeles, California.

Antithrombin-III (AT-III) is a key modulator of hemostasis; decreases are thought to be associated with thrombosis, and the degree of decrease is thought to be indicative of severity of an intravascular clotting process. The popularity of AT-III determinations has been associated with the development of several different methodologies. To assess the clinical applicability of these different methodologies, chromogenic (Abbott), fluorometric (Dade), and fibrinogen (Cutter) substrate assays were performed on 84 individuals with disseminated intravascular coagulation (DIC) or intravascular thrombosis (DVT, PE). Severity of the intravascular coagulation or thrombosis was clinically graded as 1 through 6 by one observer; thromboscintigrams were used to confirm the clinical impression: single calf thrombosis = 1, DIC = 6. Multiple linear regression analyses were performed to correlate assay results with clinical severity of disease. All patients were expected to have abnormally low AT-III levels because of documented intravascular thromboses. However, three were normal by the fluorometric assay, 26 were normal by the chromogenic assay, and 12 were normal by the fibrinogen-substrate assay. When comparing assays the correlations were as follows: Cutter vs. Dade: $r=0.70$; Cutter vs. Abbott: $r=0.70$; Dade vs. Abbott: $r=0.64$. When correlating the assay method with severity of intravascular coagulation/thrombosis the following was found: Cutter: $r=0.44$, Dade: $r=0.76$, and Abbott: $r=0.43$. The means and standard deviations for the entire population are as follows: Cutter = 79.8 ± 29.2 , Dade = 79.0 ± 19.8 , and Abbott = 102.0 ± 30.2 . Based upon this study the most clinically applicable and useful assay appears to be the fluorometric method (Dade). Because of diagnostic accuracy, automation, and ease of performing the assay this is the recommended method and, therefore has been the assay adopted in our laboratory for routine clinical use.

A COMPARISON BETWEEN THROMBOTEST AND FACTOR-X AMIDOLYTIC ACTIVITY IN STABLE AND NON-STABLE ANTICOAGULATED PATIENTS. E.M.van Wijk, L.H.Kahlé, A.Jeletich* and J.W.ten Cate. Department of Haematology, "Wilhelmina Gasthuis", Amsterdam and *The Amsterdam Thrombosis Service, The Netherlands.

We tested a mechanized amidolytic factor-X assay in 2222 patients on long term anticoagulant therapy. A good correlation was found between this assay and the routinely performed Thrombotest ($r=0.78$). With a therapeutic range between 150 and 300 units/L of factor-X amidolytic activity we obtained the same information about the state of anticoagulation in 81 % of these 2222 patients. Factor-X activity was assayed in 32 stable anticoagulated patients together with Thrombotest on at least three subsequent occasions in each patient. A fairly constant Thrombotest-factor X ratio was observed. (mean 0.38 ± 0.06) Changes in Thrombotest and factor-X amidolytic activity ran consistently parallel in a group of 20 unstable anticoagulated patients. (mean ratio 0.45 ± 0.08) Changes in Thrombotest were occasionally more pronounced than changes in factor-X activity in some patients, which could be due to the high turnover of factor VII. Relative very high or low factor-VII levels as compared to the other vitamin-K dependent factors disturbed the balance between Thrombotest and factor X. The therapeutic consequence in these unbalanced states is, that the prescribed dosage scheme of the anti-vitamin K drug could depend on the very moment of blood sampling. As a result of the high turnover of factor VII, bloodsampling one day earlier or later would then result in another dosage scheme of the drug. Therefore it might be concluded that oral anticoagulant therapy, guided by a factor-X assay could result in more stable long term treatment. Large prospective comparative trials are required to support this hypothesis.