HEMATOLOGIC CHANGES FOLLOWING BURNS. J.A. Caprini, V. Lipp, L. Zuckerman, J.P. Vagher, and D.P. Winchester. Evanston Hospital, Northwestern University Medical School, Evanston, Illinois, U.S.A.

Forty-five burn victims were studied at 48 hours and weekly with hematocrit, platelet count (PC), fibrinogen level, prothrombin, and activated partial thromboplastin time, fibrin split products (FSP), plasminogen (PL), complement C'3, C'4, and C'H 50, baseline, and 1 and 5 minute Kallikrein activity (K). Prognostic index was used for grouping blood data. Group I (GI) had a prognostic index under 20% survival and 8 of 12 died. Group II (GII) had a prognostic index of 20-80% survival and 4 of 11 died. Group III (GIII) prognostic index was over 80% survival and all 22 survived. At 48 hours GI had significantly elevated FSP compared to GII (32 ± 6 vs $12 \pm 4^*$) and 5'K of 22 ± 7 vs $50 \pm 5^*$ μ Moles/hr/ml. At one week PC and C'3 between GI and GII were $157,000 \pm 49,000/\text{mm}^3$ vs $326,000 \pm 59,000/\text{mm}^3$ and 61 ± 5 vs 113 ± 11 mg/ml, respectively. Also in the first week, PL and 5'K in GI were 6.9 ± 1.0 mg/ml and 5.2 ± 3.2 μ M/hr/ml compared to GIII 13.5 ± 1.8 mg/ml** and 37.1 ± 4.0 μ M/hr/ml*, respectively. C'3 in GI was low compared to GII or GIII for two weeks**. Summarizing, severe burns had statistically significant depression of PL, 5'K, C'3, PC, and elevated FSP. These results show activation of coagulation, fibrinolytic, complement, and kinin pathways after thermal injury and at least one measurement from each of these systems shows statistically significant alterations that correlate with the prognostic index. The results strongly support the concept of intravascular contamination with multiple systems activation following thermal injury.

* $P < .05$

** $P < .01$

EVALUATION OF THREE METHODS USED TO IDENTIFY ACCELERATED COAGULABILITY. E. Cohen, J.A. Caprini, L. Zuckerman, J.P. Vagher, and B. Robinson. Evanston Hospital, Northwestern University Medical School, Evanston, Illinois, U.S.A.

Recently, the thrombelastograph (TEG) has proved useful in the identification of accelerated coagulability. However, several laboratories use different measurements and standards by which they judge the severity of the accelerated coagulation from the output of the TEG. This paper describes a statistical comparison of three of the most widely used TEG measurements. We used actual TEG tracings obtained from two well-defined clinical groups from Evanston Hospital (A), composed of normals and patients with recently diagnosed malignancies. The latter comprise the hypercoagulable class. Our own measurements of the TEG profile include the r, r+k, angle, and MA. Piepfe's lab (B) used much more sophisticated measurements involving parameters of the equations which mathematically describe the TEG output. Raby's lab (C) utilized the r+k and ITP for their determination of kinetic hypercoagulability. At A, an additional set of TEG parameters is obtained from a simultaneous analysis of a celite-activated TEG. When the celite-activated measurements are added to the parameters of the three laboratories, all three methods have significant discriminating power. The discriminant function equation was derived using 90 normals and 90 patients with cancer. The cases correctly classified according to their degree of coagulability in laboratories A, B, and C were 98.3%, 92.2%, and 93.9%, respectively. When the equations were verified on an additional 82 cases, the percentages were 98.7%, 92.7%, and 85.4% for laboratories A, B, and C, respectively. (The sample included 51 normals and 31 with cancer). The general clinical agreement of all three laboratories demonstrates the biologic significance of the TEG as a valuable analytical tool.

THE IDENTIFICATION OF ACCELERATED COAGULABILITY. J.A. Caprini, L. Zuckerman, E. Cohen, J.P. Vagher, and V. Lipp. Evanston Hospital, Northwestern University Medical School, Evanston, Illinois, U.S.A.

This report describes a new method for comparing overall clotting characteristics between normal individuals and those with proven malignancy using thrombelastographic (TEG) comparison of native and celite-activated specimens. Native whole blood TEG, celite-activated TEG, and standard coagulation tests were performed on the same blood collection in 90 normals and 90 patients with new malignancies and the results were used to derive a discriminate equation. This equation classified correctly all 90 normals and 88 out of 90 cancer patients. The formulation was verified with an additional 82 patients with only one incorrect classification in the 31 cancer subjects. The standard coagulation tests did not discriminate without significant overlap between cancer patients and normals. The high degree of discrimination obtained with our TEG analysis provides a new tool to compare individual clotting differences that may have important clinical applications. However, the results cannot be extrapolated to selectively identify those with malignancy among the general population since many other stimuli may produce accelerated coagulability. This analysis does provide identification of accelerated coagulability in association with new malignancies.