ABSTRACTS
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ABSTRACTERS

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ABSTRACTS


Hemostatic profiles were obtained on a large group of patients with leukemia and thrombocytopenia of nonleukemic origin. Many of these patients appeared to have less platelet activity by prothrombin consumption technics than would be indicated by the degree of platelet depression. However, these data are difficult to interpret, since platelet concentrations in the test systems were not given. There was poor correlation between platelet counts and serotonin levels, the latter tending to show greater reduction. Clot retraction was well correlated to the platelet count. Vascular fragility appeared to be greater among patients with idiopathic thrombocytopenic purpura than in leukemic patients with comparable platelet counts; and similar findings were obtained with the bleeding time. Plasma-clotting factors were rarely abnormal, except for a few leukemic patients with increased fibrinolytic activity and several with long plasma-thrombin-clotting times.—T. H. S.


A patient developed severe thrombocytopenic purpura following preoperative transfusion of 2 units of whole blood. The serum of one of the donors agglutinated the patient's platelets, and this donor was discovered to have Bocck's sarcoi.d.—T. H. S.

The initials of abstracters who are not listed in the above masthead refer to those abstracters listed in the masthead of the December 1958 issue of Blood, p. 1206.
LIPIDS AND COAGULATION


Being suggested by the facts that, in the Wassermann reaction, a coagulation system is used instead of hemolytic system and some coagulation defects are observed in the case of a positive reaction, the hemostatic mechanism of cardiolipin-lecithin was studied. The lipid mixture (cardiolipin: lecithin = 1:15) was revealed to have thromboplastic activity and an accelerating effect on the clotting time of blood from patients with hemophilia A as well as from hemophilia B, although the effect in the former case was more striking.—K. M.


Single meals of 50 Gm. of butter, margarine and cooking fat all produce a similar decrease in the clotting time accelerated with Russell’s viper venom. The ingestion of two eggs, which contain only 10 Gm. of triglycerides but 3 Gm. of phospholipid, produces a similar or greater effect. The stypten time of platelet-poor plasma is very sensitive to the introduction into the plasma of minute quantities of phosphatidyl-ethanolamine (P.E.), a substance that can be used instead of platelets in many clotting tests. It was thought, therefore, that the activity of the meal of eggs might be due at least partly to its content of P.E. Accordingly a comparison of the effects of ingestion of eggs and of two kinds of phospholipid was carried out on eight apparently healthy men and women aged 20 to 40, all of whom initially showed a well-marked and approximately similar degree of change in the coagulability of their blood after a fatty meal. Measurements were of maximal changes in the Russell viper venom-accelerated clotting time (stypten time) of platelet-poor plasma, the total ether extractable fatty acid, free and combined cholesterol and of the lipid phosphorus. There was no correlation between the changes in clotting time and in the level of total fatty acids, and only poor evidence that considerable changes in clotting time were associated with an increase in total phospholipids. There was no post-prandial alteration in cholesterol levels.

Four fats of widely different degrees of saturation (cod-liver oil, soybean oil, hardened cod-liver oil, and a meal of butter, margarine and cooking fat) all shortened the post-prandial stypten time equally, and it is concluded that possibly the degree of saturation of ingested fats is immaterial to this. Trilaurin and coconut oil either did not change the stypten time or lengthened it. Fats containing short-chain fatty acids may have a different effect from those with long chain fatty acids. Phospholipids were more active weight for weight than triglycerides in shortening the stypten time after a meal, asolectin being about five times as active as triglyceride.

In one man the magnitude of the response to these fatty meals decreased during a period of three months.—R. H. G.

Blood Coagulation After the Ingestion of Saturated and Unsaturated Fats. C. Merskey and H. L. Nossel. From the Department of Medicine, University of Cape Town and Groote Schuur Hospital, South Africa. Lancet 1:806-810, 1957.

Hospital patients were fed three types of meal—low fat, low fat plus salad oil and high fat. Before the meal and four hours after it were estimated the following: coagulation time of whole blood in silicone tubes, calcium time of plasma with varying numbers of platelets, thrombin generation test, blood thromboplastin generation test, prothrombin consumption test and stypten time. The only significant difference was in the stypten time, which was significantly shorter in both the oil and high fat series when diluted
plasma was used and in the high fat series when undiluted plasma was used. The experimental results were submitted to detailed statistical analysis, and it was considered that in measurement of coagulation time the spread of readings within samples had far less effect on the experiments than the uncontrolled variability between samples. Variables that have to be considered include degrees of perfection in venepuncture, the time of the day, the weather and the taking of a meal as distinct from its fat content.

The measurement of the stypven time is affected by the presence of saturated or unsaturated fat in the plasma, and the evidence at present seems insufficient to indict either variety of fat as a cause of accelerated coagulation.—R. H. G.


Previous studies by this group have shown that butter and oleomargarine meals inhibit lysis of injected clots in rabbits. The present study provides in vitro extension of these findings.

Rabbits were given intragastric infusions of butter or of other oils. After 3 hours, blood was collected in oxalate, then clotted in a mixture of bovine thrombin and streptokinase. The clot lysis time was measured. Clots from animals fed water, corn oil, or coconut oil lysed in about 15 minutes; clots from butter-fed animals had the time lengthened to about 22 minutes. Similar prolongation of clot lysis time was observed when oxalated rabbit plasma was mixed in vitro with butter; and the other oils gave a considerably lesser effect in this system.—T. H. S.


A 73-year-old hemophiliac with angina pectoris died following melena. He had atheroma of the coronary arteries and aorta.

Unless the deposition of fibrin takes place independently of the ordinary coagulation processes, it is difficult to believe that a thrombogenic influence was an important factor in narrowing his coronary arteries.—R. H. G.


Fasting normal human serum (F.S.) as a source of the co-factors of the heparin clearing reaction was studied in an in vitro system using as substrate a coconut-oil suspension. The results showed that F.S. contains some substance, which, if preincubated with the substrate, will retard the clearing reaction temporarily. The retardation was dependent upon the time of preincubation with F.S. and the amount of F.S. used.

The authors suggest that the data indicate the need for “activation” of the circulating lipoproteins onto which the fat is to be bound, before the lipoproteins can act as substrates for the heparin-clearing reaction. The lag in clearance would then be due to a competitive binding of fat by lipoproteins unsuitable for substrate activation. As the clearing reaction proceeds, the accelerating rate of clearing may follow a conversion of unsuitable lipoprotein to a suitable, substrate-activating lipoprotein, and this process itself may be catalyzed by heparin-clearing factor.—T. H. B.

CLOTTING FACTORS

Studies are reported on two patients with abnormal blood proteins. One patient had multiple myeloma and plasma components which precipitated in the cold and at low ionic strength; the other patient had cirrhosis of the liver and a globulin precipitated at low ionic strength. When these proteins were precipitated from plasma by addition of water (pH not stated) there was a marked reduction of prothrombin and accelerators in the supernate, corresponding to activity found in the precipitate.

A cryoprecipitate prepared from the myeloma plasma initially showed components migrating as gamma globulin and fibrinogen by paper electrophoresis. However, on prolonged storage in the refrigerator, this was replaced by a single peak with intermediate mobility. Although no cryoprotein was found in the patient's serum, it elicited cryoprecipitation when incubated in the cold with normal plasma. Cryoprecipitates had prothrombin, fibrinogen and accelerator activity.

The authors conclude that the abnormal proteins may interfere with clotting by complexing with coagulation factors, a conclusion that is weakened by failure to include similar studies on normal blood. Dilution of normal plasma with water at low pH precipitates coagulation factors.—T. H. S.


The influence of manganese on blood coagulation was studied in vitro and in vivo. In vitro, the addition of Mn++ at the concentration of 3000 micrograms per ml produces a slight increase of prothrombin time, whereas concentrations of 300 and 30 micrograms cause a shortening of prothrombin time. In vivo, the intravenous introduction of 3 or 4 mcg. of colloidal Mn oxide slightly prolongs the prothrombin time within the first hour.

-P. d. N.


Prothrombin can be converted to thrombin in the presence of calcium ion and appropriate thromboplastic preparations (biorthrombin) or by solutions of 25% sodium citrate (citrate thrombin). The authors consider these thrombins to be of different chemical constitution, although derived from the same molecule. Other investigators have shown that thrombin has esterase activity, providing the basis of the thrombin assay with tosylarginine methyl ester (TAME). The present study concerns differentiation between clotting and esterase activity of thrombin.

Aqueous solutions of thrombin lose clotting activity more rapidly than esterase; and solutions of purified prothrombin with calcium ion preferentially develop esterase activity. This phenomenon is exaggerated when aged prothrombin is used. It was possible both with ninhydrin and with serum antithrombin to produce disproportionate reduction in the clotting activity of thrombin. Thrombin solutions containing mainly esterase activity showed greater fibrinolytic activity than solutions with high clotting activity. However, “esterase thrombin” was ineffective in accelerating prothrombin conversion in a low concentration of blood thromboplastin (calcium ion, platelet factor 3, platelet co-factor I, Ac globulin).

The authors conclude the presence of a “new” prothrombin derivative, related to prothrombin, and possibly in equilibrium with it.—T. H. S.


Previous studies by this group have shown that purified prothrombin can be converted into reagents showing various activities, among which are those described as PTC and
factor VII. In the present study thrombin was prepared from purified prothrombin. Such thrombin displayed esterase activity as well as the ability to clot fibrinogen. On storage, fibrinogen-clotting activity disappeared more rapidly than esterase. This "esterase thrombin" is considered to be an additional derivative from the basic prothrombin molecule.—T. H. S.


Previous studies by this author have suggested that "stable factor" and "labile factor" each react with tissue thromboplastin to form a complex of incomplete activity. Full activity is obtained only in the presence of all three components. The present study proposes to show that "labile factor" and "stable factor" complex with each other.

Reagents include adsorbed plasma as a source of labile factor, serum for stable factor and aged plasma as labile factor-free reagent. The "thromboplastin" produced by adsorbed plasma and serum in the presence of calcium and crude cephalin normally clots aged plasma. Pre-incubation of calcium, serum and adsorbed plasma gives an increased yield of labile factor when tested against aged plasma with either cephalin or tissue thromboplastin. In the presence of excess calcium, the serum formed contains a more stable labile factor. It is concluded that stable factor probably facilitates the binding of labile factor to thromboplastin.—T. H. S.


The author prepared and partially purified an enzyme from the cultures of *Bacillus cereus* and *Bacillus megatherium*. This enzyme is able to reduce tissue and blood thromboplastin, factor V, VII, VIII, IX and thrombin in vitro.—P. d. N.

**Studies on the Coagulating Activity of Human Erythrocytes. U. M. Serafini and G. Centurelli.** From the Scuola di Perfezionamento in Ematologia, University, Roma, Italy. Poli-clinico, sez.med. 64:1–21, 1957.

The characteristics of the thromboplastic activity of erythrocytes were studied by means of the thrombin and thromboplastin generation tests and the prothrombin consumption test, and other procedures for the exact identification of the mechanism of action. This was localized at the level of the reaction between factor VII and thromboplastin and of the fibrinogen-thrombin reaction. Diagnostic tests for the differentiation of hemophilic syndromes (factor VIII and IX deficiencies) were carried out according to Quick. The antiheparin activity of hemolysates was demonstrated: it is proportional to concentration and resists heating, adsorption with barium sulfate, storage at 37° C. for a week or at 4° C. for one month. The hemolysates do not exert any significant action on the clot retraction of a platelet-poor plasma.—P. d. N.

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