

HEMOSTATIC DEFECTS IN ACUTE LEUKEMIAS: SPECIAL INVESTIGATIONS INCLUDING AGAROSE-GEL-FILTRATION OF PLASMA SAMPLES. F. Asbeck, U. Schmitz-Huebner, B. Kirchof, E. Zimmermann, J. van de Loo. Department of Medicine and Institute of Physiology, University of Muenster, Muenster, W.-Germany.

22 patients with acute leukemias were investigated before and during cytostatic polychemotherapy. The mean decrease of peripheral leukocytes was $38\ 000/\text{mm}^3$ within the first 3 days of treatment. The bleeding tendency could be attributed to thrombocytopenia and one or more of the following mechanisms:

1) Only in febrile patients the development of a DIC could be shown: increase of fibrinogen and soluble fibrin; decrease of prothrombin (E.C.-activation, chrom. substrate), F. V, F. VIII, and antithrombin III (chrom. substrate, immunological). In these patients, no consumption of antiplasmin was demonstrable.

2) Non-febrile patients did not develop a DIC during the cytostatic treatment.

3) In some patients an isolated fibrinolysis could be shown already before treatment: increase of soluble fibrin and FDP; marked decrease of fibrinogen, antiplasmin, and F. XIII, which were correlated with the amount of cytoreduction. In these patients, there was no consumption of AT III.

4) Asparaginase produced the well-known defect in protein synthesis. No further influence of either cytostatic therapy or different cytological classifications of the blasts could be demonstrated.

ALTERATIONS OF HEMOSTASIS DURING CARDIOPULMONARY BYPASS (CPB): A COMPARISON BETWEEN MEMBRANE AND BUBBLE OXYGENATORS. R.L. Bick, N.R. Arbegast and W.R. Schmalhorst. San Joaquin Hematology Oncology Medical Group, California Coagulation Laboratories, San Joaquin Community Hospital, Bakersfield, California, and UCLA Center for the Health Sciences, Los Angeles, California.

Alterations of hemostasis during cardiopulmonary bypass (CPB) using bubble oxygenators have been previously defined and found to consist of a severe platelet function defect, a primary hyperfibrinolytic syndrome, and minimal thrombocytopenia. This study compares defects in hemostasis with membrane oxygenators and bubble oxygenators. 30 consecutive patients were studied and all patients studied were undergoing elective coronary artery bypass surgery. Tests of hemostasis included thrombin and reptilase times, protamine corrected thrombin times, soluble fibrin monomer, fibrinogen degradation products, fibrinolytic assays, platelet counts, and tests of platelet function. Studies were drawn pre-bypass, mid-bypass, and 1 hour post bypass. It was found that thrombocytopenia was much less in membrane patients. All patients developed a primary hyperfibrinolytic syndrome and the degree of this was equal in bubble or membrane oxygenators. Platelet dysfunction also was seen in all patients but was significantly different between the two oxygenation systems. At one hour postop, membrane patients showed no correction of platelet function as assessed by adhesion (14%), while those perfused with bubble oxygenators showed significant correction (67%) at one hour postop.

In conclusion, the primary hyperfibrinolytic syndrome occurring during cardiopulmonary bypass appears to be of equal significance regardless of oxygenation mechanism. Less thrombocytopenia, but more platelet dysfunction is seen with the membrane system.

IDENTIFICATION OF MEMBRANE-LINKED PROTEINS ACTING ON BLOOD RED CELL FILTRATION. STUDY IN CEREBROVASCULAR ACCIDENT AND THROMBOSIS. M.R. Boisseau, M.F. Lorient-Roudaut, J.P. Manuau, P. Blanchard, R. Crockett, H. Bricaud - Hôpital Cardiologique de Bordeaux et INSERM, U 8 de Cardiologie, PESSAC (France)

The blood red cell filtration (RCF) through nucleopore filters ($5\ \mu\ 0$) decrease in cerebrovascular accidents (CVA) and thrombosis. This disorder is related to circulating factors, especially fibrinogen and factor VIII. But after washing it also appears to be related to membrane-linked proteins. In this study, isolation and identification of these proteins were realized in patients with increased RCF. Have been here concerned 20 patients with CVA and/or other thrombosis, 8 days after the onset and compared to 30 controls.

After the RC have been washed twice the proteins were eluted from the membrane, concentrated and submitted to usual electrophoresis and immunoelectrophoresis. The identification was made with specific antisera against factor VIII, fibrinogen, fragments D and E, transferin, coeruloplasmin and using SDS polyacrylamid gel electrophoresis with, as controls, purified fibrinogen, fragments D and E, transferin, coeruloplasmin.

The results were: in controls the eluted proteins are similar with an albumin/globulin ratio (A/G) > 1 . In patients with a high disorder of RCF the proteins were increased, with an inversion of the A/G. Two kinds of proteins were found: (1) a β population composed of inflammatory proteins, mainly transferin, (2), a β - α population consisted by fibrin-related products. Concerning the whole population of patients with a high disorder in RCF, 80 % exhibited proteins induced by inflammation. In 20 % it was found proteins related to the coagulation, i.e. : fibrin related products. Finally, the disorder of RCF in thrombosis is much more due to these membrane disturbances than to circulating factors. During the clinical care of the patients it also has been observed that pentoxiphylline improved the RCF, certainly acting at the membrane level.

SEMI-AUTOMATED DETERMINATION OF PLATELET AND RED BLOOD CELL LOSS DURING HEMOSTASIS IN THE GUINEA PIG. M. Szoke, A.L. Willis, R. McGuire, J.M. Fisher, D. Donegan and D.L. Smith. Department of Physiology, Institute of Biological Sciences, Syntex Research, Palo Alto, Ca. 94304, U.S.A.

Male guinea pigs of 350-500 g (Hartley strain, Simonsen, Gilroy, CA) were anesthetized with pentobarbitone sodium (32.5 mg/kg, i.p.) and restrained head downwards on a plexi-glass board tilted at an angle of 45° to the horizontal. Both ears were held down on the surface of the board using adhesive tape (Scotch brand #810). The upper surface of each ear was then superfused at 5 ml/min with warmed (37°C) sterile 0.9% (w/v) NaCl solution, delivered via a 14 g hypodermic needle. The tip of the needle was lowered in a standardized manner to puncture a small ear artery. From the time of incision, serial 10 sec. aliquots of blood-stained superfusate were collected into tubes containing 10 ml of particle-free saline with EDTA ('Isoton', Coulter) to inhibit coagulation and platelet clumping. After bleeding had ceased, the tube contents were allowed to sediment overnight. The following day, platelets in the upper (platelet-rich) layer were counted electronically (Coulter). After shaking and further dilution the red blood cells were similarly counted. Effects of 500U heparin and 20 mg/kg aspirin (i.p., 1h. before bleeding) were examined. Both drugs markedly increased platelet and RBC efflux from the hemostatic site, but with characteristic differences in the time curves observed. An unexpected finding was that an incision in one ear could suppress bleeding from an incision subsequently made in the second ear. A previously undiscovered reflex or blood-borne hormone may be responsible.