1631

FIBRINOLYTIC RESPONSE AFTER VENOUS OCCLUSION AND DDAVP IN PATIENTS WITH DEEP VENOUS THROMBOSIS. M. Kozak, D. Keber. University Institute of Gerontology - Internal Clinic Trnovo, Ljubljana, Yugoslavia

After prolonged stimulation venous endothelium becomes refractory to otherwise efficacious stimuli for tissue plasminogen activator (t-PA) release. When the stimulus is removed, the restitution of the response is observed. The distention of the veins distally from the occlusion site in deep venous thrombosis (DVT) could represent such a chronic stimulus. We studied t-PA release in patients with DVT during 20-min venous occlusion (VO) and DDAVP infusion (0,4 ug/kg b.w. in 10 min). t-PA release was estimated as the difference in euglobulin clot lysis time (ECLT in U) and fibrin plates (FP in mm2) before and after VO (fibrinolytic potential). Two groups of patients were studied: 15 recumbent patients with oneside iliofemoral DVT, and 15 patients with oneside postthrombotic syndrome.

	Fibrinolytic potential (medians)					
	ECLT	FP	ECLT	FP	ECLT	FP
group	arm		diseased leg		healthy leg	
postthrombotic sy.	11,6	60	0,4	7,5	0,6	13,6
acute DVT	39,7	85,2	2,2	8,1	6,3	30,7
DDAVP	55,5	96,6	24,5	35,9	30,4	52,2

In both groups the response of legs was lower than that of arms. The comparison of the healthy and the affected leg in postthrombotic group showed no difference in t-PA release after VO. A higher release of t-PA was seen in the acute DVT group in all three tested limbs, explainable by a restitution of fibrinolytic potential due to the reduction of hydrostatic stimulus. However, the response was slightly lower in the diseased leg. In 5 patients from the acute DVT group DDAVP infusion induced higher t-PA release after VO in both legs compared to VO before DDAVP. We can conclude that hydrostatic pressure in upright position is such a strong stimulus that an additional decrease of t-PA release due to chronic venous stasis cannot be expressed. In recumbent patients DVT hinders the restitution of the response to VO in the diseased leg. DDAVP seems to act independently of hydrostatic pressure and venous stasis.

1632

INTRAVENOUS PRESSURE AND t-PA ANTIGEN RELEASE DURING VENOUS OCCLUSION OF UPPER AND LOWER LIMBS. A. K. Haaland (1), O. H. Skjønsberg (1), E. Thaulow (2), G. Gjønnes (1), H. C. Godal (1). Haematological Research Laboratory (1) and Institute for Respiratory Physiology (2), Ullevål Hospital, University Clinic, Oslo, Norway.

Venous occlusion by means of a sphygmomanometer cuff is a well-established part of the procedure for assessment of fibrinolytic capacity. It has been suggested that the resultant intravenous pressure is responsible for plasminogen activator release.
In this present study we wanted to compare i.v. pressure in the upper and lower limbs, during venous occlusion, and measure t-PA ag release. 8 male volunteers participated. A Venflon (O.D. 1.2 mm) was inserted in a distal, superficial vein. Blood samples, discarding the first 2-3 ml, were drawn at 4 min. intervals and pressure recordings (Hewlett-Packard)made every min. during the first 8 min. of venous occlusion and thereafter at 4 min. intervals. The cuff was inflated to a pressure midway between systolic and diastolic values after separate measurements of blood pressures of the upper and lower extremities. The occlusion lasted for 20 min.
Blood pressure measurements in the lower limbs gave consistently higher values than for the upper limbs. Hence, the resultant cuff pressure was on the average 20 mmHg higher in the legs. There was no significant difference in i.v. pressure, evaluated as total area beneath a pressure/time graph, between the upper and lower extremities. In the arms the i.v. pressure reached a plateau phase after 2-4 min. The pressure buildup was slower in the legs.
t-PA values for the upper limbs after 20 min. of venous occlusion: median 15 ng/ml (range 9.4-26.0) and for the lower limbs: 8.15 ng/ml (range 4.8-13.3). This difference is significant, $p = 0.035$. There was no sifnificant difference between resting t-PA ag levels prior to occlusion.
We conclude that the fibrinolytic response, measured as t-PA ag, after venous occlusion, is twice as high in the upper as in the lower limbs and not 4 times as high as previously claimed. A possible explanation for the lower fibrinolytic response, could be the slower buildup of i.v. pressure during venous occlusion in the lower extremities.

1633

EFFECT OF VENOUS STASIS ON THE RELEASE OF VON WILLEBRAND FACTOR ANTIGEN (VWF:AG) AND PLASMINOGEN ACTIVATOR (PA) IN PATIENTS WITH THROMBOEMBOLISM. T.Uchiyama, M.Matsumoto, N.Narahara, H.Tanaka, N.Kobayashi and T.Maekawa. The Third Department of Int. Med., Gunma University School of Medicine, Maebashi, Gunma, Japan.

Plasma levels of vWF:Ag and PA (both activity and antigen) present in the venous blood were studied in 114 patients with arterial thromboembolic disease and 30 age matched healthy individuals. In 29 cases of the patient group (patients) and 7 cases of the control group (controls), turnover of intravenously injected I-125-fibrinogen was studied. Venous blood was obtained from the antecubital vein of subjects before and after 5 minutes' of venous occlusion. vWF:Ag was determined by electroimmunodiffusion (Laurell's method). PA activity was measured by the method of Campbell et al, and PA antigen was assayed by ELISA kit purchased from BioPool Co. And the following results were obtained: 1) Mean plasma level of vWF:Ag was significantly higher ($p<0.001$) and mean plasma level of PA activity was significantly lower ($p<0.05$) in patients than in controls both before and after the venous occlusion. 2) Mean plasma level of PA antigen was significantly higher ($p<0.01$) in patients (mean$\pm$SD; 4.05$\pm$1.58 ng/ml) than in controls (2.95$\pm$1.11 ng/ml) before the venous occlusion. The mean specific acitivity of PA was significantly lower ($p<0.01$) in patients than in controls both before and after the venous occlusion. 3) Plasma half life (T/2) of fibrinogen was significantly shorter ($p<0.001$) and catabolic flux (J_3X) of fibrinogen was significantly higher ($p<0.001$) in patients tahn in controls. 4) Significant relationship was observed between T/2 of fibrinogen and plasma levels of vWF:Ag before and after the venous occlusion, PA activities after the occlusion, and levels of PA antigen before the occlusion. 5) Significant relationship was also observed between J_3X of fibrinogen and plasma levels of vWF:Ag before and after the verous occlusion, PA activities after the occlusion, and levels of PA antigen before the occlusion. These results suggests that the changes in endothelial cell function might be a common mechanism responsible for the abnormal findings in plasma levels of both vWF:Ag and PA and for the acceleration of fibrinogen metabolism.

1634

LEUCOCYTES AND PLATELETS DEPOSITION ON ENDOTHELIAL SURFACE INDUCED BY PARTIAL VENOUS OCCLUSION.AN ULTRASTRUCTURAL STUDY IN THE DOG. J.Aguiar Andrade(1), C. Resende (2), A.C. Monteiro (1), A. Adolfo (1) and J.M. Pina Cabral (1). Centro de Fisiologia da Hemostase (INIC)-Dept.s of Physiology(1) and Histology and Embryology, Porto Medical School,(2) Hosp. S. João, Porto, PORTUGAL

After partial venous occlusion of dog's femoral vein until 60% of its initial cross section for 90 min. we have observed a decrease in plasminogen activator content (t-PA) in the pre-occlusion segment and an increase of prostacyclin like activity (PLA) in the post-occlusion segment (in press).

In this work and in order to try to find an ultrastructural basis for these findings, we carried out observations of the constricted segments with transmission and scanning E.M. (n=10).

We observed that : -1) endothelial cells were maintained in place, with minimal ultrastructural changes, namely a small increase in vaccuolization ; -2) there was massive subendothelial deposition of leucocytes, predominantly polimorphonuclears, which permeate internal elastic lamina and were also found in subjacent structures; -3) platelets were rarely seen and platelets agregates were never found. Autologous Indium labelled platelets injection confirmed "in vivo" these findnigs (n=10).

We conclude that in partial venous occlusion, platelet deposition and endothelial cell descamation are not initiating factors in changes observed at t-PA and PLA vessel wall levels, although the role of white blood cells will need further investigation.