

A COMPARATIVE STUDY OF HEPARIN AND A HEPARIN ANALOGUE IN THE PREVENTION OF THROMBOSIS IN PATIENTS WITH GYNAECOLOGICAL CANCER UNDER RADIOTHERAPY. R.von Hugo, R.Hafter and H.Graeff. I. Frauenklinik der Universität München, FRG.

The frequency of thrombosis (D.V.T.) in patients treated for gynaecological cancer by combined external irradiation and intravaginal radium application, as detected by the 125 I-fibrinogen-test, is considerable (43 % D.V.T.). 84 patients undergoing radiotherapy were studied in a first controlled trial to assess the effect of 2x7500 U daily s.c. calcium heparin and 2x5000 U daily s.c. of a semisynthetic heparin analogue (SSHA) on the incidence of D.V.T. during therapy. 4 patients had to be excluded. The frequency of D.V.T. was 15 % (6/40) in the heparin group and 25 % (10/40) in the SSHA group. The difference was not statistically significant. Long term application of prophylaxis (regular radiotherapy lasts 4 weeks) causes discomfort to the patient because of the numerous subcutaneous injections. It was the aim of a second trial to investigate the prophylactic efficacy of a single s.c. injection per day. 80 patients were randomly allocated into two groups and received either 12500 U calcium heparin (n=40) or 12500 U SSHA (n=40). The incidence of D.V.T. was reduced to 15 % by a single heparin injection per day; in patients given SSHA the incidence was 17,5 %. The results presented indicate that SSHA is as effective as heparin in preventing D.V.T. during radiotherapy and that a single s.c. injection per day is sufficient.

THE CONTRIBUTION OF INCREASED FIBRINOLYSIS INDUCED BY INTERMITTENT PNEUMATIC COMPRESSION OF THE LEGS IN THE PREVENTION OF DEEP VEIN THROMBOSIS. A.C. de Boer, A.G.G. Turpie, R. Butt, E. Genton, Department of Medicine, McMaster University, Hamilton, Ontario, Canada.

Intermittent pneumatic compression (IPC) consistently prevents venous stasis by increasing venous return of the legs but fails to prevent deep vein thrombosis (DVT) in some patients, especially patients with malignancy and subarachnoid haemorrhage (SAH). This suggests a mechanism in addition to preventing stasis is required for the prophylactic effect of IPC. IPC increases fibrinolysis and this may contribute to DVT prevention. In 74 patients with SAH treated with antifibrinolytic drugs, 21% of 42 randomized to IPC prophylaxis developed DVT and 19% of 32 controls. In 143 neurosurgical patients aged >55 years and not treated with antifibrinolytic drugs, 30% of controls (n=76) developed DVT compared to 16% treated with IPC (n=67;  $p > 0.05$ ), in contrast to 187 patients <55 years in whom 20% of controls (n=88) developed DVT, compared with none in the IPC group (n=99;  $p < 0.001$ ). The effect of IPC on fibrinolytic activity in 80 of these patients was evaluated using a modification of the dilute blood clot lysis time (mean  $\pm$  SEM, hrs). In 64 medical control patients there was a correlation between age and lysis time ( $r = 0.33$ ;  $p < 0.05$ ). In operative patients aged <55 years, lysis time was significantly shortened in patients given IPC compared with age-matched controls ( $6.3 \pm 0.6$  v  $8.8 \pm 0.8$ ;  $p < 0.05$ ). In patients aged >55, there was no difference in lysis time in IPC patients compared with age-matched controls ( $10.2 \pm 1.4$  v  $9.7 \pm 0.8$ ;  $p > 0.1$ ). In all patients treated with antifibrinolytic drugs, lysis times were markedly prolonged. The data show that ineffectiveness of IPC in certain patient groups was related to failure of enhancement of fibrinolytic activity and this is consistent with the hypothesis that activation of fibrinolysis contributes to the prevention of DVT with IPC.

SEQUENTIAL PNEUMATIC COMPRESSION-AN EFFECTIVE METHOD OF PREVENTING DEEP VENOUS THROMBOSIS. J.H. Scurr, T.E. Bucknall, H. Ellis & C. Wastell, Surgical Unit, Westminster Hospital, London SW1, England.

195 patients undergoing major surgical operations over 40 years of age were randomly allocated into 3 groups. In Group 1 the patients were given subcutaneous Heparin 5000 units b.d. for 7 days. Group 2, graduated compression stockings were applied on admission to hospital, being removed for the duration of surgery and replaced by a pneumatic sequential compression device. Group 3, graduated compression stockings were applied on admission to hospital, were removed during surgery and replaced with a sequential compression device which remained until the patient was fully ambulant and then replaced with a graduated compression stocking. Patients were studied daily using the II25 fibrinogen uptake test, doppler, strain gauge plethysmography and venography to confirm positive or doubtful results. The incidence of DVT in the Heparin and extended compression group is 9%. The incidence in the compression group is 14.2%. Blood loss and haematoma were significantly greater in the Heparin group. Although there is no significant difference between the incidence of DVT in either group, there were significantly less problems in the compression groups. Sequential compression presents an effective method of preventing DVT.

USE OF INDIUM-111 LABELED PLATELETS TO ASSESS PLATELET DEPOSITION ON ARTERIOSCLEROTIC PLAQUES IN A PRIMATE MODEL. M.J. Welch, C.J. Mathias, W.J. Powers, L.A. Sherman, B.A. Siegel, and T.B. Clarkson\*. Washington University School of Medicine, St. Louis, MO; \*Bowman-Gray Medical School, Winston-Salem, NC.

Groups of primates (*Macaca arctoides*) were fed either a control (n=4) or a high-cholesterol diet (n=4) for a period of at least five years. Serum cholesterol levels in the experimental group were in excess of 250 mg/dl while the control group had levels from 150 to 200 mg/dl. In-111-labeled platelets and Tc-99m-labeled red blood cells were injected into each animal, and consecutive images were taken and stored in a computer immediately thereafter and 24 hours later. The Tc-99m-labeled red blood cell image was used to subtract the blood pool background from the In-111-labeled platelet image to enhance visualization of platelet deposition. The subtracted images allowed the platelet deposition in the regions of the abdominal aorta, femoral, carotid, and renal arteries to be determined. All of the experimental monkeys had abnormal accumulation versus only one of the control animals. Four of the animal studies were repeated (2 experimental and 2 control), and comparable results were obtained. The animals were then given 3 mg/kg/day of aspirin for 5 days and the studies repeated. No abnormal accumulations of platelets were seen in the animals after treatment with low-dose aspirin (30 mg/kg/day) and prostacyclin (PGI<sub>2</sub>). Our results suggest that In-111-labeled platelets may be useful to study the pathogenesis of arteriosclerosis and pharmacological techniques for its amelioration.