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ANALYSIS OF HEPARIN MONITORING. J.A. Caprini, S.J. Rabadi, J.P. Vagher, J. Mitchell. Department of Surgery, Evanston Hospital, Evanston, IL.

Forty-six thrombosis patients were treated for a total of 437 days with continuous pump infusion heparin therapy. A bolus injection (50 units heparin/kg body weight) was followed by continuous infusion (14.2 units/kg/hour). The patients were randomized into 3 groups, daily coagulation profiles performed, and heparin dose adjusted by the following criteria: 1. no daily dose change unless indicated by clinical symptoms; 2. daily dose adjusted to yield an APTT 1.5 to 2X control; 3. daily dose adjusted to yield a negative TEG index.

	Group 1	Group 2	Group 3	ALL
Days monitored	104	153	180	437
Mean hourly heparin dose-units	943.6	1009.1	886.4	942.6
Mean body weight-kg	69.2	72.8	68.9	70.4
Number of patients	13	15	18	46
COMPLICATIONS				
Pulmonary Embolus	1 (7.7%)	0	0	2.2%
Major bleed	0	1 (6.7%)	0	2.2%
Minor bleed	4 (30.8%)	8 (53.3%)	6 (33.3%)	41.3%

Group 2 received the most heparin, had the highest body weight, and greater incidence of minor bleeding (+ hemotest urine and/or stool)(5 point drop in hematocrit).APTT values over 100 sec were seen in 44.4% of patients without bleeding and 52.5% with bleeding complications. Unmeasurable TEG graphs (SLT) were seen in 14.8% of patients without bleeding and 57.9% with bleeding. However, the combination of APTT over 100 sec and SLT were associated with 87.5% incidence of bleeding.

The safety of continuous infusion heparin therapy is seen by the 2.2% incidence of major recurrent thrombosis and 2.2% major bleeding with or without laboratory monitoring. The combination of APTT and TEG was predictive of bleeding in 87.5% of cases. The TEG graph can be used to detect activated samples eliminating inconsistent APTT results.

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PREVENTION OF DEEP VEIN THROMBOSIS IN MEDICAL PATIENTS BY LOW DOSE SUBCUTANEOUS HEPARIN. J.J.F. Belch, G.D.O. Lowe, A.G.Ward, C.D. Forbes and C.R.M. Prentice, University Department of Medicine, Royal Infirmary, Glasgow, Scotland.

In recent years it has been repeatedly shown that low-dose subcutaneous heparin reduces the incidence of deep vein thrombosis (D.V.T.) after major general surgery. By comparison, the prevention of thrombosis in medical patients has been little studied. A randomised trial was undertaken in one hundred patients with heart failure and/or chest infection to determine whether low-dose subcutaneous heparin reduced the frequency of D.V.T. in the legs. Heparin (5000 units 8 hourly), started within 12 hours of admission to hospital and continued until the patient was fully mobile, significantly reduced the frequency of D.V.T. diagnosed by the ^{125}I-fibrinogen scan technique, from 26% to 4% ($p<0.01$). Heparin did not cause bleeding problems except for a 20% incidence of injection site bruising. We therefore recommend prophylaxis with low dose subcutaneous heparin in patients with heart failure or chest infection who require more than 3 days' bed rest.

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BEHAVIOUR OF EXOGENOUS HEPARIN IN PATIENTS WITH NEPHROTIC SYNDROME. A.M. Fischer, M. Guillot, R. Girot, M. Léon, P. Triadou, M.D. Dautzenberg, C. Jacques and F. Josso. Departments of Haematology and Pediatrics, University Hospital Necker-Enfants Malades, Paris, France.

Behaviour of exogenous heparin was studied in 35 subjects after intravenous injection of 50 u/kg heparin : 10 healthy control adults, 8 control children with normal hemostatic system, 17 children with nephrotic syndrome without renal insufficiency. Blood samples were collected before injection and 15 min, 30 min, 60 min and 120 min later, for the following tests : APTT, thrombin time, automatised heparin assay using a chromogenic substrate (S-2238). Heparin behaviour was assessed by two criteria : recovery (plasma heparin level) 15 min after the injection ; half-life of recovered heparin. Results were compared with the following parameters : WBC and platelet count ; serum albumin and lipids ; plasma antithrombin III, α2 macroglobulin and fibrinogen ; histological findings when available.

In nephrotic children, mean heparin recovery was lower than in the control groups, very poor or even negligible in 9/17 cases. Heparin half-life was close to 37 min in most patients, shorter than in healthy controls (mean : 46 min), and dramatically decreased in 4 cases.

No significant correlation was observed between the observed heparin behaviour and the considered parameters ; sensitivity to heparin was notably unrelated to plasma antithrombin III level. Insensitivity was observed in three patients with amyloidosis.

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THE CONTROL OF HEPARIN ADMINISTRATION BY THE ACTIVATED PARTIAL THROMBOPLASTIN TIME (APTT). Jean M. Thomson. National (UK) Reference Laboratory for Anticoagulant Reagents and Control, Withington Hospital, Manchester, UK.

The UK National Quality Control Trials have previously shown that the various APTT methods differ in their ability to detect low levels of heparin (Poller et al 1980). UK and US proficiency surveys have also shown lack of linearity of some APTT methods over a range of heparin concentrations. A further, recent collaborative exercise, using lyophilised plasma from a heparinised donor, has confirmed that most of the commonly-used commercial reagents have a higher threshhold of sensitivity to heparin than the reference reagent provided by the National (UK) Reference Laboratory. Additional studies on fresh plasma samples obtained from heparinised patients, have demonstrated considerable variations in the detection of heparin by widely-used commercial APTT techniques.

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