

V. V. Kakkar and T. P. Corrigan (King's College Hospital Medical School, London SE5 8RX, England): **Low-Dose Heparin Prophylaxis Against Fatal Pulmonary Embolism.** (465)

Several controlled trials have shown that low-dose heparin is effective in reducing the incidence of deep vein thrombosis without increasing the risk of bleeding. However its effectiveness in preventing fatal pulmonary embolism has yet to be determined and, for this, a multicentre trial was organised in which 31 centres took part; patients over the age of 40, undergoing only major elective abdominal, thoracic or orthopaedic surgery were included. They were randomly allocated to a control or heparin group and, for each patient entered in the trial, essential information was recorded in a proforma designed for computer analysis. The incidence of fatal pulmonary embolism was determined by autopsy examination. 4,121 patients were admitted to the trial - 2,076 in the control group and 2,045 in the heparin group. 16 patients in the control group died due to acute massive pulmonary embolism confirmed at autopsy, but only 2 in the heparin group. The difference is statistically significant ($P < 0.01$). There was no evidence of excessive blood loss during or after surgery. These results will be presented in detail. Low-dose heparin prophylaxis can now be recommended as the method of choice for preventing postoperative fatal pulmonary embolism.

A. E. Schaer, L. Huber, P. Bader, U. Baertschi and P. Morf (Univ.-Frauenklinik, CH-8006 Zürich, Switzerland): **Low Dose Heparin Versus Oral Anticoagulants in the Prevention of Postoperative Venous Thrombosis in Gynecology.** (466)

In a randomised trial involving 458 patients low dose heparin, peri- and postoperatively given subcutaneously (Liquemin subcutan Roche) 2×5000 U twice daily for one week, was compared with oral anticoagulants. Deep vein thrombosis, diagnosed clinically and by the 125-J-fibrinogen test, was less frequent in the heparin group (2.3%/4.6%). However, the incidence of pulmonary embolism was rather high (6 cases in the heparin group, only one with oral anticoagulants). Mild postoperative hemorrhage occurred more often with heparin, but the incidence of severe hemorrhage remained the same (4.5%).

These results suggest to examine a combination of the two methods: low dose heparin perioperatively, oral anticoagulants in the postoperative course.

L. E. Citterio and P. M. Mannucci (Orthopedic Hospital G. Pini; Hemophilia and Thrombosis Centre, University of Milano, Italy): **Low-Dose Heparin for Prevention of Deep-Vein Thrombosis in Patients Undergoing Hip-Arthroplasty.** (467)

The efficacy of low-dose heparin in patients undergoing hip surgery is not established. 95 patients over the age of 40 undergoing an elective operation of hip-replacement arthroplasty have been randomly allocated to two groups on the basis of numbered sealed envelopes. 45 patients received 5000 units of subcutaneous calcium heparin preoperatively and 8-hourly after this until they were fully mobile (days of treatment: mean 14.1, $SD \pm 5.0$), 50 patients received no treatment and acted as controls. The two groups were comparable in respect to age, weight, blood-group, previous disease, findings on admission, type of operation and other drugs used. The ^{125}I -fibrinogen-uptake test was used to diagnose DVT by injecting in all patients 100 μCi postoperatively on the day of operation and scanning the legs for seven days. The frequency of DVT was 42% (21/50) in the control group and 20% (9/45) in the treated group. The difference is statistically significant ($P < 0.05$) using a χ^2 test with Yates' correction. Since Hampson et al. (Lancet ii, 795, 1974) have recently suggested that low-dose heparin has no significant effect on the frequency of DVT after total-hip replacement arthroplasty but appears to delay its onset, a new trial is presently being carried out in which 100 μCi of ^{125}I fibrinogen are injected twice and the legs scanned for 14 days.