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Low molecular weight dextran to prevent venous thrombosis after elective surgery of the hip

A preliminary report

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THROMBOEMBOLISM is one of the most frequent and dangerous of the complications that occur in the orthopaedic patient not only after trauma, but also after elective surgery of the hip. Evidence is mounting to indicate that there is a rapidly increasing real incidence of this problem.[1] Prevention of thromboembolic disease by a safe method is preferable to treatment instituted after the disease has developed. The threat of venous thrombosis is greater with the increasing age of patients and with the more complicated and extensive operative procedures. The limitations of the clinical examination and the recognition of deep venous thrombosis deserve further emphasis; many "silent" thromboses occur. The use of preoperative and postoperative venography has demonstrated that venous thrombosis develops in almost 50 percent of the patients.[2]

The high incidence of venous thrombosis in patients undergoing elective surgery of the hip was the reason for investigating this problem. Our preliminary report describes a controlled study of the incidence of venous thrombosis after elective surgey of the hip, and the efficacy and safety of its prevention by the infusion of low molecular weight dextran. If low molecular weight dextran proves to be effective in decreasing thromboses and thromboembolic complications in patients undergoing elective surgery of the hip, it will be preferable to the use of anticoagulants.[3]

Materials and methods

In a controlled study of 39 patients who were to undergo elective surgery of the hip, preoperative venograms of the lower extremities were obtained. According to sealed instruction, not known to the surgeons, the anesthesiologists were directed to administer 500 ml of low molecular weight dextran or

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500 ml of 5 percent dextrose and water during the elective operation. Postoperatively the same patients received either 500 ml of low molecular weight dextran or 500 ml of 5 per cent dextrose and water, daily. All patients were mobilized in traction applied to the affected leg. In from 10 to 12 days postoperatively, venograms of the lower extremities were again obtained. No attempt was made to group these patients by sex or by primary disease. The factor common to all patients was that they underwent elective major surgery of the hip.

Results

Of 21 patients given 5 percent dextrose and water, 10 patients (48 percent) had venous thromboses in the lower extremity demonstrated on the postoperative venograms. Of the 18 patients treated with low molecular weight dextran, four (22 per cent) had demonstrable thrombosis. Of the 39 patients, thirteen had osteoarthritis of the hips, and four had rheumatoid arthritis of the hips, three of whom had abnormal venograms. Four other hips were operated on for avascular necrosis, and two demonstrated venous thrombosis on venograms in the postoperative period. Of the 14 patients with abnormal venograms, nine had no clinical symptoms of venous thrombosis in the lower extremity. Pulmonary embolism occurred in four patients, two in each group; three had no symptoms of venous thrombosis. There were no adverse effects from the use of low molecular weight dextran in the dosages used.

Summary and conclusions

A high incidence of venous thrombosis is seen to occur after elective orthopaedic surgical procedures. Venography is an effective diagnostic aid in establishing the presence or absence of venous thrombosis. Low molecular weight dextran was administered to 18 of 39 patients during and after surgery of the hip. To 21 patients, 5 percent dextrose and water was administered. Venous thrombosis developed in fewer of the former group. A second phase of this study, in which higher dosages of low molecular weight dextran is used, is currently underway.

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