Low-Molecular-Weight Heparin (Fraxiparine) to Prevent Deep Vein Thrombosis in Patients Undergoing Orthopedic Surgery: A Clinical Report of Two Regimens

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Sir,

Randomized controlled trials conclude that low-molecular-weight heparin (LMWH) is effective and safe in preventing deep vein thrombosis (DVT) after surgery [1, 2], including certain orthopedic procedures on the lower limbs associated with an important risk of postoperative DVT [3]. Recently, Kakkar et al. [4] did not find a significant difference between a simple and a double dose of an LMWH (Fragmin, Kabivitum, Sweden). In this letter we report our experience with postoperative prevention of DVT with an LMWH (Fraxiparine, Choay, France) in orthopedic patients according to two dose regimens.

Two hundred and sixty-two patients undergoing hip replacement or knee replacement, lower limb osteotomy or lower limb osteosynthesis were admitted to a clinical trial, after exclusion of an underlying bleeding disorder or a previous history of vein thrombosis. They were assigned at random to treatment with either a once (group 1) or a twice (group 2) daily injection of LMWH (hypodermic syringe with a single dose of 0.3 ml each; 7,500 antifactor Xa units) starting on the evening of the day of the operation. There were no significant differences between the two groups of patients, with regard to demographic data or type of surgery. Those with a single injection of LMWH also received an injection of saline placebo. Patients, nurses, surgeons and observing physicians were unaware of the treatment regimen for a particular patient.

Phlebographic data were obtained after clinical suspicion of DVT. The appearance of a hematoma at the site of the operation leading to a surgical draining was taken as an objective endpoint indicating an increased bleeding risk. The results have been analyzed using a $\chi^2$ test; $p < 0.05$ has been considered as significant. In group 1, 13 DVT (10%) have been detected by phlebography. Two of them were accompanied with pulmonary embolism, but none of the patients died. In group 2, receiving a twice daily injection of LMWH, 2 DVT (1.5%) have been detected.

136
Letter to the Editor
The difference in frequency between the two groups is significant at the 0.002 level. The number of secondary surgery for postoperative draining was identical in the two groups (2 vs. 3). Most clinical trials of LMWH have been devoted to finding a safe but effective dose or to comparing their antithrombotic effectiveness with that of a placebo [5]. The main result of our trial is that a single daily injection of 0.3 ml of Fraxiparine is not enough to prevent DVT and that the doubling of injection rates every 12 h leads to better prevention. This is obvious even though the absence of a systematic screening examination may have undervalued the incidence of DVT in both groups of our trial.

The antifactor Xa activity of LMWH is present for up to 24 h after subcutaneous injection [6]. Our results might indicate that antifactor Xa activity is not necessarily a biological correlate of antithrombotic action under our circumstances. We conclude that in spite of the imperfections of our evaluation standards a single daily injection of Fraxiparine is evidently not suitable for preventing DVT as far as orthopedic surgery is concerned. This may be due to the fact that the single formula available is 0.3 ml, which might be too low to cover 1 day’s needs in high-risk surgery.

References