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Low molecular weight heparin reduces the incidence of deep venous thrombosis in high-risk medical patients

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Keywords

Deep venous thrombosis, heparin, pulmonary embolism

Comments

This interesting study shows that for every 10 moderate risk medical patients given 40 mg enoxaparin once daily, one case of venous thromboembolism will be prevented.

There remain several unanswered questions - would unfractionated heparin work as well with similar safety profile? How important is asymptomatic deep-vein thrombosis as a clinical end-point? What is the optimum length of treatment? Of most relevance to intensivists is the fact that intubated patients were excluded. The risk of thromboembolism is likely to be higher in ICU patients but so is the risk of complications from heparin, particularly upper gastrointestinal bleeding.

Introduction

Venous thromboembolism is a common cause of death in medical patients. Nevertheless, in contrast to surgical patients, the use of routine thromboprophylaxis remains controversial in this group. This study was a double-blind, placebo-controlled randomised study comparing the efficacy of two dosage regimens of low molecular weight heparin in thromboprophylaxis.

Aims

To compare the efficacy of two dosage regimens of low molecular weight heparin in thromboprophylaxis.

Methods

Moderate risk medical patients were randomised to placebo, 20 mg enoxaparin or 40 mg enoxaparin (subcutaneous injection, once per day) for 6 to 14 days. The primary outcome measure was venous thromboembolism (assessed by venography or ultrasound) between days 1 and 14. Death rate, haemorrhage and thrombocytopaenia were also assessed. Intubated patients were excluded from the protocol.

Results

In total 1102 patients were enrolled, but only 866 patients who underwent venography (718 patients) or ultrasound (148 patients) were included in the main analysis. Secondary outcome was assessed in 798 patients by day 110. All groups were well matched for baseline characteristics.

The incidence of venous thromboembolism was significantly lower in the 40 mg enoxaparin group than in the placebo group (5.5 % vs 14.9 %, relative risk, 0.37 CI96.7 0.22 to 0.63, $p < 0.001$). There were 100 deep-vein thromboses diagnosed by day 14. There were no significant differences in primary outcome between the 20 mg enoxaparin group and placebo.

There were no significant differences in deaths or adverse events between the three groups.

Discussion

Daily injections of 40 mg enoxaparin significantly reduced the incidence of venous thromboembolism in acutely ill medical patients without increasing the risk of major haemorrhage.

The use of a placebo group was considered ethical because of the conflicting evidence and recommendations concerning unfractionated heparin.Nevertheless the 63% decrease in risk of venous thromboembolism in the 40 mg group is similar to the reduction reported in small studies of medical patients given unfractionated heparin 5,000 U twice daily.

Additional information

The study was sponsored by Rhone-Poulenc Rorer which manufactures enoxaparin.

References

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