Safety and efficacy of high dose unfractionated heparin versus high dose enoxaparin for venous thromboembolism prevention in morbidly obese patients

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Background: Venous thromboembolism (VTE) is a common cause of morbidity and mortality in hospitalized patients, and morbid obesity further increases this risk. Higher fixed doses of enoxaparin and unfractionated heparin (UFH) have been shown to reduce the rate of VTE compared to standard doses in this population. However, it is unclear which thromboprophylaxis regimen is optimal for reducing the incidence of hospital-acquired VTE and major bleeding events.

Methods: A single-center retrospective observational study was conducted in morbidly obese (BMI ≥ 40 kg/m²) hospitalized patients that received either high-fixed dose enoxaparin (40 mg subcutaneously (subcut) every 12 hours) or UFH (7,500 units subcut every 8 hours) for VTE prophylaxis. Primary outcomes included incidence of major bleeding and VTE diagnosed during hospitalization, and were compared between the two treatment groups. Predictors of major bleeding were evaluated by multivariable regression.

Results: In the 305 patients included in the study (n=190 UFH, n=115 enoxaparin), the incidence of major bleeding was significantly higher in the UFH treatment group (OR 0.54, 95% CI 0.32-0.94; p=0.025), with no significant difference in the incidence of VTE diagnosed during hospitalization. While there were several clinical differences between patients that had a major bleeding event and those that did not, the only independent predictors of major bleeding were intensive care acuity (OR 3.32, 95% CI 1.91-5.78; p<0.001) and selection of UFH for DVT prophylaxis (OR 2.16, 95% CI 1.22-3.82; p=0.008).

Conclusion: High-fixed dose UFH significantly increases the risk of major bleeding events in morbidly obese patients compared to high-fixed dose enoxaparin.