Letter to the editor

Value of venous thromboembolism prophylaxis by enoxaparin with anti-factor Xa trough concentration monitoring in surgical care

Dear editor,

We read recently published an article in Pharmacy Practice; Pharmacist recommendations for prophylactic enoxaparin monitoring and dose adjustment in trauma patients admitted to a surgical intensive care unit by Scrimenti *et al*. This study aimed to evaluate pharmacists' recommendations for providing prophylactic enoxaparin treatment to trauma patients in the surgical intensive care unit (SICU), medical providers' acceptance of the recommendations, and the clinical outcomes after implementing the anticoagulant therapy.[1]

We have concerns about the cost-effectiveness of monitoring anti-factor Xa trough concentrations (AFXa-TRs) in surgical intensive care venous thromboembolism (VTE) prophylaxis with enoxaparin. Correlation of interim outcome of levels of AFXa-TRs to the incidence of VTE need could be discussed as well. As discussed in the limitations of the study, not being patient-oriented is a major limitation as not ordering AFXa-TRs cannot be implied to the quality of practice of medical providers. Number needed to treat (NNT) shall be calculated to see in how many surgical intensive care patients, AFXa-TRs to be ordered to actually prevent an incidence of VTE. Future studies in this line might make a better clinical sense.

AFXa trough concentrations are better correlated to VTE predictability compared to peak concentrations. Still, AFXa-TRs range for therapeutic is defined well in literature, but the prophylactic ranges are not clear yet. Studies in trauma patients found that subprophylactic AFXa-TRs were common among the patients and dosage adjustment resulted in a reduced rate of VTE without an increased risk of bleeding.[2] Based on Greenfield's Risk Assessment Profile score, prophylaxis with enoxaparin monitoring using AFXa-TRs reduced deep vein thrombosis incidence from 20.5% to 7.1% in high-risk trauma patients.[3]

The clinical advantage of enoxaparin over heparin is a lesser need for monitoring. This improves cost-effectiveness as expenses of monitoring, and chances of bleeding are less. Monitoring AFXa-TRs in any surgical intensive patients would result in a basic question; Does heparin with monitoring would be more cost-effective than enoxaparin with monitoring in surgical intensive care having continuous nursing support? Bleeding due to enoxaparin is not easy to reverse as compared to heparin-induced bleeding. In our opinion, as clinical pharmacists, we should be patient-oriented than physician oriented to implement cost-effective and safe therapy proven with clinically relevant outcomes.

Ohta *et al*. evaluated the risk factors of postoperative bleeding after elective surgery for patients with primary colorectal cancer receiving pharmacological thromboprophylaxis of enoxaparin. The significant differences in the type of thromboprophylaxis were observed between postoperative bleeding-negative and bleeding-positive group. However, no statistical significance was found, which questions the need for thromboprophylaxis in trauma patients.[3] In addition, Sun *et al*. observed that the incidence of VTE was higher with low molecular weight heparins (LMWH) than factor Xa inhibitors, specifically in total hip or total knee arthroplasty.[4]

We hope these comments would be useful in the continuation of studies on the prophylactic utility of enoxaparin in surgical care and how pharmacists make a difference in improving patient outcomes. Naturally medical or nursing providers would accept what is best for the patients. The accountability of pharmacists' interventions is studied and scrutinized.

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