SCA 5

INTRODUCTION OF A NEW ACTIVATING CLOTTING TIME TEST SYSTEM AT ONE INSTITUTION: RELATIONSHIP WITH CHANGES IN HEPARIN MANAGEMENT AND POSTOPERATIVE BLEEDING AFTER CARDIAC SURGERY

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Introduction: Activated Clotting Time(ACT) remains the preferred point of care monitor of heparin anticoagulation during cardiopulmonary bypass(CPB)(1). At our institution, standard guidelines are to achieve a target ACT of >480 seconds. A new ACT system (Actalyke ACT system) was introduced in January 2002 that has superior precision, but typically generates ACT values after heparin approximately 20% lower than the previously used Hemochron system(2).In the absence of revised guidelines for the new system, a decision was made to continue with a target ACT value (480); we anticipated an increase in heparin dosing. Although one study found an association between reduced postoperative bleeding(POB)and increased heparin dosing(3),the effect of this change in practice on post operative bleeding was not known.The aim of the study was to compare heparin dosing and postoperative bleeding. Therefore, we tested the hypothesis that total heparin dose and twelve hour post operative chest tube drainage would be different during the 6 month period before and after the introduction of the new ACT system.

Methods: With IRB approval, we gathered demographics, total heparin dose and 12hr postoperative chest tube drainage data for all on-pump adult cardiac surgery patients from June 2001 to December 2001 (Pre ACT change; n = 701) and from March 2002 to October 2002(post ACT change; n = 753). First 12 hour postoperative chest tube drainage (CTD) was gathered only for primary CABG surgery. Student T test for unequal variance was performed for total heparin dose and log CTD pre and post ACT change.

Results: Demographic variables were similar between the two groups. Mean heparin dose was significantly higher after introduction of the new ACT system, (48754 (+/-14125) versus 44375(+/-14296); $p < .0001$ Figure 1) and 12 hour CTD after CABG surgery was significantly lower (517 (+/- 313) versus (716 (+/- 657) mls; $p = 0.0006$. figure 2).

Discussion: We confirmed an association of increased heparin dosing during CPB with the change in ACT systems. Interestingly, this change was also associated with a statistically and clinically significant reduction in post operative bleeding during a period when no other major changes in practice occurred. A possible interpretation of our findings is that increased heparin dose inhibits clotting factor consumption during CPB, thereby improving postoperative hemostasis. However, further study is required to determine the cause of the relationship between higher heparin doses and reduced bleeding in this setting.

References:

1. Anaesthesia:1980;35:250-6
2. J Clin Monit Comput 2002;17: 287 -92
3. Anesth Anal 1996;82:13 -12

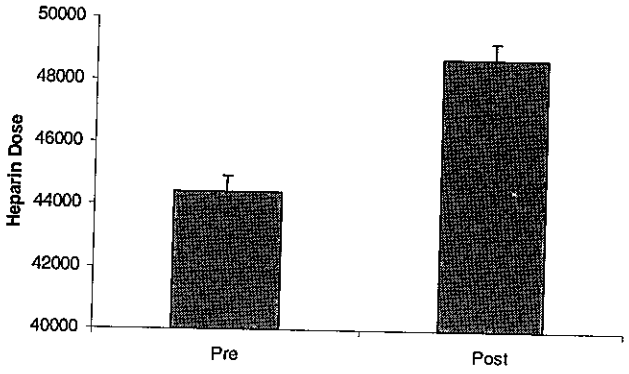
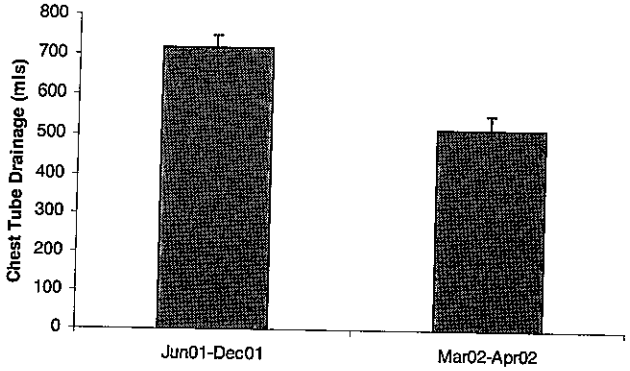


Figure 1:Mean total heparin dosing for the Pre Act change(Pre) and Post ACT Change(Post)



Graph 2- Chest tube drainage