Hemostasis Management by Use of Hepcon/HMS™: Increased Bleeding Without Increased Need for Blood Transfusion

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Background
Extracorporeal circulation forces complete anticoagulation, most frequently achieved by complete heparinization. Activated clotting time (ACT) is the gold standard for monitoring, although there is a lack of correlation between heparin plasma level and ACT. Several systems for the estimation of free heparin have been developed: in this study we focused investigating on the influence of the Hepcon/HMS™ system on postoperative bleeding and transfusion requirements.

Methods
114 patients were randomly assigned to one group monitored by use of Hepcon/HMS™ (group hepcon) and another group by use of ACT (ACT group); 7 patients were excluded due to re-exploration. 12 patients did not receive aprotinin; this part of the study was stopped early due to massive increased bleeding. 46 and 49 patients of groups hepcon and ACT, respectively, received aprotinin.

Results
Using aprotinin, in group hepcon total administered heparin was elevated by 13% in contrast to group ACT while administered protamin was reduced by 20%. The ratio of antagonization was 82 ± 17% and 51 ± 12%, respectively. Coagulation parameters were not influenced except for increased postoperative ACT and PTT in the hepcon group. Bleeding of patients in that group was significantly increased during the first 6 hours, which led to an increased autologous retransfusion. Need for substitution of other blood components was not increased postoperatively.

Conclusions
Use of the Hepcon/HMS™-system for monitoring of heparinization during extracorporeal circulation is possible without increased risk of thromboembolism. Postoperative blood loss was slightly but significantly increased but there was no need for more heterogenous transfusion.

Key words
Hepcon/HMS - Anticoagulation monitoring - Postoperative bleeding - Cardiac surgery - Extracorporeal circulation

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