Summary and Conclusion

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CPB is an essential support system to the surgical procedure required for open heart surgery. CPB causes exposure of blood to a large artificial surface, which results in the inappropriate activation of coagulation and fibrinolytic systems. CPB in the pediatric population has unique characters. The smaller blood volume of children compared with the large prime volume of CPB results in hemodilution and capillary leak. Thus coagulation system is endangered primarily by hemodilution and secondarily by consumption of coagulation factors which lead to the marked early postoperative blood loss which is the most dangerous complication of open heart surgery.

The study was carried out on sixty pediatric patients undergoing open heart surgery, to determine the effect of the application of hemofiltration during CPB rewarming on coagulation and blood loss. This was carried out through the study of some parameters (Hb, Hct, platelets, PT, APTT, fibrinogen, AT III, D-dimer, FDPs, and blood loss.).

The patients were randomized into two groups of thirty patients each undergoing either conventional CPB or CPB with hemofiltration.

This study showed a significant difference in blood indices and coagulation parameters in the patients of the hemofilter group. There was less prolongation of coagulation times due to reversal of hemodilution of coagulation factors, also there was no increase in fibrinolytic factors.

Moreover there was reduction in blood loss, ventilation time, ICU and hospital stay in the hemofilter group.

In conclusion, hemofiltration was found to be a safe and a highly beneficial application when applied during CPB rewarming in pediatric patients undergoing open-heart surgery.