The effect of cyanosis on perioperative platelet function as measured by multiple electrode aggregometry and postoperative blood loss in neonates and infants undergoing cardiac surgery.

Abstract:
Platelet dysfunction is one of the major haematological disturbances of cardiopulmonary bypass (CPB). In addition, cyanosis is known to cause further coagulation disturbances. We prospectively studied 110 children under 1 year of age for the effects of cyanosis on baseline platelet aggregation, the time course of function on cardiopulmonary bypass, the effect on chest tube drainage (CTD) and the transfusion requirements. Using multiple electrode aggregometry (MULTIPLATE(TM)) with the activators adenosine diphosphate (ADP) and thrombin-related activation peptide (TRAP), platelet aggregation was assessed and examined for predictive value. Neonates under 30 days of age (n = 51) and infants (n = 59) were separated for analysis. Cyanosis had no significant effect on platelet function during the first 24 h after surgery. Similarly, there was no association to perioperative platelet function, CTD or exposures to blood products. ADP after protamine correlated significantly with the total number of exposures for neonates and infants and CTD at 6 h in the newborn group. Upon intensive care unit admission, ADP values correlated to the total number of exposures to blood products. No other platelet function value was able to clinically predict CTD or subsequent blood.
transfusion requirements. In our study population, we observed no clinically significant effect of cyanosis on baseline and the perioperative course of platelet function, CTD and the number of exposures to blood products. Therefore, children under 1 year of age do not require a different approach with regard to platelet transfusions, independent of cyanosis. Clinically, platelet function was not a reliable predictor of CTD or blood transfusion requirements.