REDUCTION OF CYTOKINES AFTER CARDIOPULMONARY BYPASS AND POSTOPERATIVE OUTCOME

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Introduction: Prevention of cytokine release, in patients undergoing cardiopulmonary bypass (CPB), attenuate systemic inflammatory response and may decrease morbidity and mortality. Antifibrinolytic agents, and steroids were thought to interfere with the inflammatory response. The effects of aprotinin, tranexamic acid and methyl prednisolone (MPS) on plasma levels of cytokines following CPB, and on postoperative recovery were studied.

Patients and Methods: Sixty patients, undergoing coronary artery bypass graft surgery, were randomly divided in four equal sized groups, to receive aprotinin, tranexamic acid, MPS, and no trial drugs. Fibrinogen and D-diamers were estimated before and after protamine administration. Cytokine levels: Interleukin-8 (IL-8), IL-6, and IL-10 were estimated before and after CPB. Duration of intubation, ICU length of stay, hospital length of stay, blood loss and amount of blood transfusion were recorded.

Results: Both aprotinin and tranexamic acid administration resulted in significant drop in levels of D-diamers (p <0.05), IL-8 (p<0.01) and IL-6 (p<0.05) after CPB, and a significant reduction in postoperative blood loss and of blood transfusion (p<0.05) compared with control group. MPS administration resulted in significant decrease in the levels of IL-8 (p<0.01), IL-6 (p<0.01) and significant increase in level of IL-10 (p<0.001) after CPB, in respect to the control group. The duration of intubation and hospital length of stay were significantly shorter (p<0.05) with the three drugs used in respect to the control group.

Conclusion: aprotinin and tranexamic acid were effective in reducing IL-6 and IL-8 and in suppression of D-dimers formation. MPS administration blunted the increase of IL-6 and IL-8 and was associated with increase of IL-10. An improved postoperative outcome was observed with the three drugs used.