MIXED POSTERS I

Platelets

COMPLEMENT DEPENDENT AND INDEPENDENT EFFECTS OF BACTERIAL PRODUCTS ON RABBIT AND HUMAN PLATELETS. N. Semeraro and J. Vermylen. Lab. of Blood Coagulation, Dept. of Medical Research, University of Leuven, Belgium.

The effect of 13 lipopolysaccharides (LPS) from aerobic and two LPS from anaerobic bacteria, two mucopeptides and two meningococcal polysaccharides, on rabbit platelets in citrated and heparinized plasma was studied by aggregometry. The LPS from aerobic bacteria showed variable aggregating activity. LPS from S. Minnesota Re 595 (essentially lipid A) was one of the most active. The two mucopeptides were very active whereas the LPS from anaerobic bacteria and the meningococcal polysaccharides were inactive. These effects were abolished by inactivation of complement and by ethyleneglycoltetraacetic acid (EGTA) indicating that they are dependent on activation of the classical pathway. None of these effects was observed using human platelets.

When washed rabbit platelets are mixed with complement-depleted rabbit serum and calcium chloride, generation of thrombin occurs. All the LPS preparations but not the mucopeptides or meningococcal polysaccharides enhanced the rate of thrombin formation to a variable extent. Identical effects have also been found using human platelets (Brit.J.Haemat. in press).

It is concluded that LPS affect rabbit platelets by separate complement dependent and independent mechanisms. However with human platelets only the complement independent phenomenon (enhancement of thrombin generation) is observed.

PLATELET AND FIBRINOGEN PRODUCTION: RELATIVE SENSITIVITIES TO ENDOTOXIN. B.L. Evatt, B.M. Alving, W.R. Bell, and J. Levin. Center for Disease Control, Atlanta; Bureau of Biologics, Bethesda; The Johns Hopkins University School of Medicine, Baltimore, U.S.A.

Both the threshold, and possible mechanisms, for increased platelet and fibrinogen production after endotoxin were determined in male New Zealand rabbits. Animals received E. coli endotoxin (Difco, 026:B6) in single IV doses of 0.1, 0.5, 5.0, 10.0, or 50.0 µg/kg body mass. Selenomethionine-^{75}Se (^{75}SeM) was injected 18 h after endotoxin, and the percent incorporation into platelets and fibrinogen was used to measure thrombopoiesis and fibrinogen synthesis. Endotoxin was detected with the limulus test only in the blood of rabbits that had received 10.0 or 50.0 µg/kg. However, platelet production was increased after 0.5 µg/kg, the smallest endotoxin dose which caused significant reduction of platelet counts. Fibrinogen synthesis was increased after 5.0 µg/kg. An endotoxin dose of 50.0 µg/kg caused the greatest increase in ^{75}SeM-labeled platelets and fibrinogen (150% and 304%, respectively). Platelet counts were lowest at this dose; however, fibrinogen levels were not decreased nor were fibrin(ogen) degradation products detected. Therefore, stimulation of fibrinogen synthesis by endotoxin does not appear to be mediated through intial reduction of circulating fibrinogen levels. In contrast, a direct relationship was demonstrated among endotoxin dose, decrease in platelet count, and increase in production. The data suggest that endotoxin may alter platelet production by its effect on levels of circulating platelets.