Friday, July 17, 1981

Poster Presentations

Artificial Surfaces – IV

11:00–12:30 h

Grand Ballroom Lobby Boards 266–277

0985

EFFECT OF PROSTACYCLIN (PGI_2) ON THE RELEASE OF β THROMBOGLOBULIN (βTG) AND PLATELET FACTOR 4 (PF 4) DURING EXTRACORPOREAL CIRCULATION (ECC). F.R. Matthias, H. Ditter, D. Heinrich, J. Simon, D. Söhngen, E. Schleussner and P. Walter. Dept. of Internal Medicine and Cardiovascular Surgery, Justus Liebig University, Giessen, West Germany.

A prospective and double-blind study was conducted on 40 patients with coronary bypass operation. In 20 patients 8 ng of PGI_2 per min and kg body-weight were infused during ECC. The amount of heparin administered per kg was the same in both groups. Drop in platelet count during ECC however was less and bleeding times were longer under PGI_2 infusion. βTG was released from platelets immediately after onset of ECC and remained at a nearly constant level. PF 4 concentration in plasma increased continuously over the whole period of ECC (1600 ng/ml or 1200 ng/ml, max. values). PGI_2 infusion leads to a significant reduction of the amount of both platelet constituents released (950 ng/ml or 750 ng/ml, max. values). After ECC βTG and PF 4 dropped down immediately to preoperative values. No differences in per-/postoperative blood loss and in the amount of heparin bound to patients' antithrombin III could be observed.

0986

INTERACTION OF FACTOR XI WITH ACTIVATING AND NON-ACTIVATING SURFACES. C.Mannhalter and S.Schiffman.Departments of Medicine and Biochemistry, University of Southern California School of Medicine, Los Angeles, CA.

Recent experiments have shown that purified human factor XI and trypsin activated factor XI adsorb not only to glass but also to several plastic materials. For both kinds of material the binding site(s) has (have) been localized in the heavy chain region of the molecule. Albumin (1o mg/ml) markedly reduces adsorption to plastics but not to glass, which could indicate different binding mechanisms to glass and plastics.

To help elucidate the nature of binding of factors XI and XIa to the different surfaces, three types of eluting agents have been evaluated for their ability to desorb bound factors XI and XIa -- high salt (2,4 M NaCl), a non-ionic detergent (Triton X-1oo), and an anionic detergent (SDS). High salt is only effective in eluting factors XI and XIa from glass and siliconized glass, which suggests ionic binding. Triton X-1oo, which can split hydrophobic bonds, desorbs factor XI from plastics (except polycarbonate) and only poorly from glass. Elution with SDS, which has both a highly charged group and a hydrophobic hydrocarbon chain, is successful on glass and plastics.
We therefore conclude that the binding of factor XI to glass is the combined effect of ionic and hydrophobic binding, whereas the adsorption of factor XI to plastics is primarily hydrophobic.

Activation of factor XI, certainly a major change in the protein structure, appears to increase hydrophobic bonding to glass, since activated factor XI is almost completely eluted from glass by Triton X-1oo.