THE ROLE OF FC FRAGMENT RECEPTOR IN IMMUNE INJURY TO HUMAN PLATELETS INDUCED BY PROTEIN A OF STAPHYLOCOCCI. J. Rasperg, S. Stackley, D. Hammond, C. Chang, S. Timmons and R. M. Des Pres, V.A. Hospital and Medical Center, Nashville, TN, USA.

The ability of the FC fragment to trigger an immune injury to human platelets challenged with immune complexes or aggregated IgG was primarily observed in plasma-free medium. We now report that the FC fragment of IgG in autologous plasma when Protein A-bearing staphylococci were added to the system. Protein A, a cell wall constituent of pathogenic staphylococci interacts with the FC fragment of IgG making it reactive with the membrane receptor. Aggregation and release of platelet injury when Protein A was suspended in autologous plasma occurred when at least two Protein A-bearing staphylococci were added per one platelet. Partial stripping of Protein A by trypsinization reduced the extent of platelet injury. When Protein A was solubilized and isolated by affinity chromatography, release of soluble Protein A-IgG complexes occurred only in plasma-free medium. Using radio-labelled Protein A, we demonstrated that release of [3H]serotonin was paralleled by the binding of [125]I-Protein A-IgG complexes to platelet membrane. This binding was dependent on the FC fragment and its receptor since the removal of the FC fragment abolished the binding of Protein A to platelets. Thus, immune injury to human platelets has been demonstrated in two systems: (1) when Protein A was in solid phase, i.e., attached to staphylococci, platelet injury by Protein A-IgG in plasma, and (2) when Protein A was in fluid phase, i.e., isolated from staphylococci, injury occurred only in plasma-free medium. Both mechanisms required the FC fragment of IgG to interact with the membrane receptor on human platelets.

COMPLEMENT-DEPENDENT ACTION OF IGL-SPECIFIC ANTIBODIES ON HUMAN PLATELETS. D. Heinrich, C. Maßler, R. Schiraldi and D. Bitter-Suermann, Department of Internal Medicine and Institute of Clinical Immunology and Blood Transfusion, University of Giessen, and Institute of Medical Microbiology, University of Mainz, FRG.

HLA-antibody-induced platelet alterations are mediated by (a) complement-independent (Heinrich et al., Acta Haematol., 52, 445, 1977) and (b) complement-dependent mechanisms. To prove the latter, autologous platelet-rich plasma (PRP) of HLA-typed donors was incubated with HLA-specific sera and various inhibitors of platelet function (prostacyclin-β; PGFβ, acetyl-salicylic acid (ASA), N-acetyl maleimide (NAM), adenosine, 2-deoxy-glucose + antibody to human platelets in autologous plasma when Protein A-bearing staphylococci were added to the system. Protein A, a cell wall constituent of pathogenic staphylococci interacts with the FC fragment of IgG making it reactive with the membrane receptor. Aggregation and release of platelet injury when Protein A was suspended in autologous plasma occurred when at least two Protein A-bearing staphylococci were added per one platelet. Partial stripping of Protein A by trypsinization reduced the extent of platelet injury. When Protein A was solubilized and isolated by affinity chromatography, release of soluble Protein A-IgG complexes occurred only in plasma-free medium. Using radio-labelled Protein A, we demonstrated that release of [3H]serotonin was paralleled by the binding of [125]I-Protein A-IgG complexes to platelet membrane. This binding was dependent on the FC fragment and its receptor since the removal of the FC fragment abolished the binding of Protein A to platelets. Thus, immune injury to human platelets has been demonstrated in two systems: (1) when Protein A was in solid phase, i.e., attached to staphylococci, platelet injury by Protein A-IgG in plasma, and (2) when Protein A was in fluid phase, i.e., isolated from staphylococci, injury occurred only in plasma-free medium. Both mechanisms required the FC fragment of IgG to interact with the membrane receptor on human platelets.

IMMUNOLOGICAL ABNORMALITIES IN CHILDHOOD CHRONIC IODIOPATHIC THROMBOCTOPTIC PURPURA (ITP). Marie J. Stewart, Russell H. Yomar, Merrill L. Miller and Frederick R. Darby, Dept. of Peds. and Fac., SUNY, Upstate Med. Ctr., Syracuse, N.Y.

Chronic ITP, unlike acute ITP, may be the result of an underlying immunologic disorder. To examine this possibility 3 children, and their families (totaling 13 members) were studied in an attempt to identify underlying abnormalities in cellular and humoral immunity. All 3 patients had their disease for more than 1 year. All had shortened platelet life spans. None were receiving drugs, and none had had their splenectomy removed. In these patients, 2 of 3 were found to have decreased numbers of T lymphocytes and FMA reactivity; 2 of 3 had decreased circulation, 2 of 3 had decreased lymeaglobulinemia; 1 of 3 had decreased lymeaglobulinemia, and all 3 had abnormal reactivity to a variety of intradermal antigens. In the family members these same abnormalities were found with increased frequency. 6/13 were found to have decreased numbers of T lymphocytes and FMA reactivity; 6/13 circulatory antigens; 6/13 decreased lymeaglobulinemia and 6/13 decreased lymeaglobulinemia. In addition, autoantibodies such as a biologically false positive serological test for syphilis, and antithyroid antibodies were also found. A parent of one of the propositi, and 2 asymptomatic siblings of another were also documented to have shortened platelet life spans in the presence of normal platelet counts. The HLA antigens, A3 and B7 were found in all 3 families. These 2 HLA antigens have previously been documented to occur with increased frequency in a variety of "auto-immune" disorders. These studies demonstrate that chronic ITP occurs in families with immunologic defects, and suggests that this disease has a genetic rather than an exclusively environmental basis.