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Immunomodulatory effect of anti-HLA class I IgM antibody and soluble HLA class I on polymorphonuclear neutrophils

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Summary: Background and Objective: Polymorphonuclear neutrophils (PMNs) are considered as components that play several important immunoregulatory roles. The aim of this study is to identify soluble mediators in normal human serum that may cause immunological reactions in which PMNs are strongly involved. **Methods:** For this purpose, the correlation between the amount of several soluble mediators in normal human serum and the cytotoxic activity of the serum against PMNs was investigated. **Results:** The investigation revealed a strong correlation between the amount of anti-human leukocyte histocompatibility antigen (HLA) class I immunoglobulin isotype M (IgM) antibody (Ab) and serum cytotoxic activity against PMNs, and a reverse correlation between the amount of soluble HLA class I (sHLA-I) in the serum and serum cytotoxic activity against PMNs. We also found that the addition of affinity-purified sHLA-I to anti-human HLA class I IgM-positive serum significantly reduces the serum cytotoxic activity against PMNs. In this case, an immune complex (IC) formed by anti-human HLA class I IgM Ab and purified soluble HLA class I (psHLA-1) markedly decreased serum cytotoxic activity. Moreover, it was observed that the IC formed by anti-HLA-I IgM and sHLA-I bound to PMNs via not only HLA class I antigens but also two kinds of low-affinity receptors for IgG, namely, CD16 and CD32, have protective roles against cytotoxic IgG attack. **Conclusion:** The present results indicate that anti-HLA class I IgM, sHLA-I and Fc γ Rs are strongly involved in the immunomodulatory reactions of PMNs. **Key words:** Polymorphonuclear neutrophils, Anti-HLA class I antibody, IgM, Soluble HLA class I, R_c receptors.