Analysis of heat shock protein 70 as a causal molecule of aplastic anemia

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Analysis of heat shock protein 70 as a causal molecule of aplastic anemia

Research Project

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Research Category

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Allocation Type

Single-year Grants

Section

一般

Research Field

Hematology

Research Institution

Kanazawa University

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Research Abstract

To characterize immune pathophysiology of aplastic anemia (AA), we studied expression of heat shock piotein (-hsp) 72 in peripheral blood mononuclear cells (PBMCs) of untreated AA patients using flow cytometry. AA patients whose PBMCs exhibited high percentages (>30%) of hsp72+ cells after heat treatment were likely to respond to cyclosporine therapy. The high inducibility of hsp72 in PBMCs was not detected in other hematologic diseases, such as myelodysplastic syndrome and hemolytic anemia. Among PBMCs of AA patients responsive to cyclosporine, hsp72 expression was primarily detected in T cells. Thus, detection of hsp72^+ cell in PBMCs before treatments appeared to be useful for predicting a favorable response to cyclosporine therapy. Next, we collected PBMCs of AA patients who later received combined immunosuppressive therapy consisting of antithymocyte globulin and cyclosporine from the other hospitals in Japan, and determined the inducibility of hsp72. Although approximately 40% of patients showed high percentages of hsp72^+ cell among PBMCs, there was no correlation between a good response to the combined immunosuppressive therapy and a high inducibility of hsp72 in PBMCs.
In some AA patients, hsp72 was detectable not only in the cytoplasm of PBMCs but also on the surface of red blood cells (RB Cs). Detailed analysis of hsp72 on RBCs revealed that in additi9n to AA patients, hsp72^+ cells could be detected on 20-90% of RBCs of about 30% of normal individuals and that its expression was restricted to individuals bearing blood type A and AB.Heat treatments did not influence the expression of hsp72 on RB Cs. Since hsp72 could not be detected on normocytic erythroblasts that were generated from erythroid progenitor cells of a normal individual with blood type A, hsp72 appeared to emerge on RBCs after terminal differentiation of erythroid progenitor cells. Beside hsp72, RBCs of individuals with blood type A and AB expressed hsp90. Binding of anti-hsp72 monoclonal antibodies was not seen in type O RBCs that were forced to express A antigens by the treatment with N-acetyl galactosaminyltransferase and UDP-N-acefyl galactosamine. Thus, the expression of hsp72 seemed to be genetically determined although it is closely associated with A antigen expression. The function and biological significance of hsp72 on RBCs remain to be determined.▲ Less

Research Products (16 results)

All | Other

All | Publications (16 results)

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