

PRESENCE OF ANTIBODY AGAINST THE INDUCIBLE HEAT SHOCK PROTEIN HSP71 IN PATIENTS WITH ACUTE HEAT INDUCED ILLNESS

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Antibodies against heat shock or stress proteins (Hsps) have been reported in patients with a number of diseases where they may be involved in the pathogenesis of disease or may be of use for prognosis. Heat-induced diseases such as heat cramps, heat exhaustion or heat stroke are frequent in hot working or living environments. There are still few investigations on the presence and possible significance of autoantibodies against heat shock proteins in heat-induced illnesses. Using an immunoblotting technique with recombinant human Hsps, we have looked for the presence and measured titers of antibodies against Hsp60, Hsp71, and Hsp90 α and β in 42 young patients with acute heat-induced illness. We also examined the presence of antibody against Hsp71 in 57 older patients with acute heat-induced illness and the changes in titers of anti-Hsp71 antibodies in 9 patients hospitalized by emergency physicians. In the group of young persons exercising in a hot environment, the occurrence of antibodies against Hsp71 and Hsp90 α was significantly higher among individuals with symptoms of heat-induced illness ($P < 0.05$) than in the matched group of non-affected exercising individuals. Moreover the titers of antibody against Hsp71 were higher in individuals of the severe and mild heat-induced illness groups, the highest titer being found in the most severe cases. A study of a second group of 57 older heat-affected patients exposed to extreme heat gave similar results. Again patients with the more severe heat-induced symptoms showed a significantly higher incidence of antibodies to Hsp71 than controls and the titer of anti-Hsp71 was higher in the severely affected group. Finally in a study of 9 patients, it was observed that the titer of anti-hsp71 decreased during recovery from severe heat symptoms. These results suggest that measurement of antibodies to Hsps may be useful to assess how individuals are responding to abnormal stress within their living and working environment and may be used as one of biomarkers to evaluate the susceptibility to heat-induced diseases.

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