IS THERE A RELATION BETWEEN THE NATURAL ANTIBODY NETWORK AND THE INFECTION RELATED ANTIBODY FORMATON IN CARDIAC SURGERY PATIENTS?

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Introduction:The number of certain infectious pathogens to which an individual has been exposed to (pathogen burden) has been linked to the development and prognosis of coronary artery disease. Natural antibody network is considered to have a role in pathogen specific antibody formation. High levels of autoantibodies against 60-kDa members of the heat shock protein family (HSP60) have been associated with atherosclerotic vascular diseases. Anti-citrate synthase antibodies, previously proven by our research group to belong to the pool of natural antibodies may also play a part.

Methods:Pericardial fluidand plasma samples of 36 cardiac surgery patients(12 AVR, 12 CABG with AMI and 12 CABG with no AMI in anamnesis) were tested for anti-CS and anti-HSP60 antibodies with previously developed in-house ELISA techniques, while antibodies against Chlamydia pneumoniae, Mycoplasma pneumoniae, Helicobacter pylori, Yersinia enterocolitica and Borreliaburgdorferi were measured with commercially available serological tests.

Results:Anti-HSP60 and anti-CS antibodies were present in pericardial fluid, at significantly lower amounts than in plasma with strong correlation between quantities. Anti-CS IgG antibodies were at highest amounts both in plasma and pericardial fluid. No significant differences were found in the levels of natural antibodies in the given disease groups. All patients' sera contained antibodies against at least one pathogen which couldn't be observed in every respective pericardial fluid sample. No significant associations between defined disease groups and pathogen specific antibodies were found. Pathogen burden significantly increased the amounts of anti-CS and anti-HSP60 antibodies.

Conclusions:According to our results, the impact of pathogen burden on amounts of natural antibodies cannot be explained by molecular mimicry, because the bacterial and human HSP60 proteinsequences show high similarities and Chlamydia and Mycoplasma pneumoniae have no citrate synthase. Since no significant differences were found in the given disease groups, it can be hypothesized that infection triggered inflammation and tissue damage can rather be the causative factors of the observed differences in the level of natural autoantibodies, than the extent of atherosclerosis or myocardial infarction.