MICROARRAY ANALYSIS REVEALS NOVEL TARGET AUTOANTIGENS IN DILATED CARDIOMYOPATHY

Poster Contributions
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Background: Dilated cardiomyopathy (DCM) is the leading cause of heart failure. It can be caused by various factors but dysregulation of the immune system is believed to play a central role in disease progression. Autoantibodies directed against various antigens present in cardiac tissue are found in DCM patients. Previous studies have indicated immunoadsorption (IA) as a novel treatment option for these patients.

Methods: Microarray analysis with samples obtained from DCM patients vs. healthy controls was performed and novel antigens were identified. 14 DCM patients treated with IA were analyzed at baseline and one year after IA. Parameters analyzed were left-ventricular ejection fraction (LVEF), NYHA-classification, n-proBNP, performance, 6 min walk test, and maximum oxygen volume. Western Blot analysis against proteins both newly and previously identified as autoantigens were performed with sera from 14 DCM patients and 10 healthy individuals as control.

Results: One year after IA a significant impact was observed on LVEF (10.4 %, p-value of 0.0134), and NYHA-classification (p-value of 0.0353), an improvement of n-proBNP (7.7%), performance (1.2%), 6 min walk test (3.8%), and maximum oxygen volume (6.8%). The Western Blot analysis identified four proteins showing a positive impact after IA in cardiac disease progression. These were glycogen synthase kinase 3 beta (GSK3beta), and fatty acid binding protein 3 (FABP3), which occur twice as frequently in DCM patients as in healthy individuals. Patients expressing antibodies against GSK3beta and FABP3 show an overall improvement in the six measures of cardiac function after IA. Elution of antibodies to dual specificity tyrosine-phosphorylation-regulated kinase 1A (DYRK1A) and leptin, although occurring only once in DCM patients and not in the control, could be correlated with an overall positive impact on cardiac outcome.

Conclusions: After one year, IA still shows a positive impact on the 6 measures of cardiac health and an overall improvement of the health of DCM patients. Antibodies against GSK3beta and FABP3, and antibodies against leptin and DYRK1A are promising proteins functioning as markers for selecting patients for IA treatment.