[2008] [P4285] High molecular weight adiponectin is increased in plasma of patients with idiopathic dilated cardiomyopathy with and without overt heart failure

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Purpose: Adiponectin, a biologically active substance with multimeric structure released by adipocytes, is considered as a new diagnostic/prognostic marker in the cardiovascular disease. The trimeric low-(LMW), the hexameric middle-(MMW) and the high-molecular weight (HMW) isoforms have been found in human peripheral circulation. It has been hypothesized that the HMW, that is an active form, has cardioprotective effects and its determination could give additional information on the role of this protein in cardiovascular diseases. Aim of the study was to determine the levels of adiponectin multimers in patients with dilated cardiomyopathy (DCM) and to evaluate its relationship with inflammatory profile and left ventricular (LV) function.
Methods: The plasma levels of total (T) and adiponectin multimers were evaluated in 50 no diabetic patients with DCM (30 males, 38 in NYHA class I-II, 12 in NYHA class III, LVEF% 40.6±1.4, age 57±1 yrs, BMI 26.6±0.41 kg/m2, mean±sem) and in 25 age- and BMI-matched healthy subjects as controls. An Elisa system (Alpco Diagnostics, US) was used to directly measure T and, after treatment with two different specific proteases, the HMW and the sum of MMW and HMW forms while the levels of the MMW and LMW were obtained by difference.
Results: T adiponectin in DCM increased with respect to controls as a function of disease severity (3.8±0.38 mg/ml vs 5.4±0.48 in NYHA class I-II vs 8.0±1.9 in NYHA class III; $p<0.05$ NYHA III vs controls and NYHA I-II) and correlated with functional and inflammatory indices. HMW was the predominant isoform in plasma, accounting for 50% of T adiponectin to which was positively correlated ($p<0.001$); MMW and LMW represented each the 25% of total protein. HMW significantly increased in DCM with respect to controls (1.8±0.15 mg/ml vs 2.5±0.21 in NYHA class I-II vs 4.8±1.2 in NYHA class III; $p<0.001$ NYHA III vs controls and NYHA I-II) while MMW and LMW did not vary with respect to controls or as a function of NYHA class. HMW correlated negatively with LVEF% ($p=0.0041$), positively

with Interleukin-6 ($p<0.001$) and BNP ($p=0.003$). No significant correlation with BMI was observed both for total and HMW adiponectin.
Conclusions: This study demonstrates that HMW adiponectin is elevated in DCM patients and increases significantly as a function of severity. Although many studies need to identify if the HMW isoform is associated to cardioprotection, the significant relation with markers of inflammation and cardiac dysfunction, lacking for MMW and LMW forms, underlines the importance to investigate the role of HMW in this disease.

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