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The effect of high triglyceride diet in cardiac remodeling in estrogen depleted rat model

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Women in menopause have higher chance to suffer from metabolic syndrome which is one of the main risk factors in Cardiovascular Diseases (CVD). Myocardial Extracellular Matrix (ECM) has important role in cardiovascular homeostasis; therefore, changes in the ECM may contribute to the appearance of certain pathological processes, such as dysregulation of Matrix Metalloproteases (MMPs). Our aim was to investigate the effect of estrogen deficiency and High Triglyceride diet (HT) on cardiovascular function, moreover, the potential therapeutic effect of voluntary exercise. During our experiments Ovariectomize (OVX) and Sham-Operated (SO) female rats were randomized according to the following aspects: exercise: running/non-running; diet: HT, normal (CTRL). After 12 weeks, we determined the activity of 64 kDa and 72 kDa MMPs, the level of MMP inhibitor (TIMP-2), Glutation (GSH), Nitrotirozine (3-NT) in heart tissues, the concentration of type-I collagen in the heart and the size of infarct. According to our results we can demonstrate that OVX and HT diet caused a significant increase in collagen accumulation and we also experienced higher infarcted area. In contrast, TIMP-2, GSH, 3-NT levels as well as the activity of MMP-2 were significantly decreased. Exercise resulted a significant elevation in the aforesaid parameters, while type-I collagen concentration and necrotic extension of the heart have reduced. It is concluded that, estrogen deficiency and HT diet affect the balance of enzymes that regulate ECM; however, regular exercise is involved in normalizing these values through the modulation of MMP-2.

Biography

Denise Borzsei has completed her Master's degree and currently pursuing her PhD at University of Szeged.

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