Abstract

(summary of doctoral dissertation)

It has become increasingly apparent in recent years that there are important differences of many cardiovascular disorders including ventricular tachycardias in men and women. Gender differences have been observed in the epidemiology, pathogenesis and clinical presentation of various ventricular arrhythmias. Physiological menopause occurs as a part of a woman's normal aging process being based on the natural cessation of estradiol and progesterone production by the ovaries. The dramatic fall in circulating estrogens levels at menopause impacts many tissues including cardiovascular system. Because the incidence of coronary heart disease (CHD) rises significantly after menopause, it has been hypothesized that women's CHD advantage before menopause (in comparison to men of the same age) could be due to the protective effects of estrogens. However, controversial results have been reported since early nineties until today. While some studies found reduction in the incidence of CHD and in mortality from cardiovascular diseases some other studies failed to provide any evidence for an independent role of estradiol levels in determining CHD in postmenopausal women and some studies even found positive association of endogenous estradiol with the risk of CHD among women above 65 years of age.

Study 1: This study explored possible gender differences in electrophysiological characteristics and catheter ablation outcome in idiopathic ventricular tachycardia from right ventricular outflow tract (RVOT-VT) patients. We have found that females suffering from RVOT-VT had shorter QRS duration, lower right ventricular voltage, and more low voltage zone in the RVOT free wall than males with the same diagnosis. Although the possible mechanisms are not clear, our findings suggest differences in ventricular remodeling between genders in patients with idiopathic RVOT-VT. The RVOT free wall was the prominent region, which was not associated with different ventricular tachycardia (VT) incidences. Those findings suggest that ROVT low voltage might be the remodeling result after VT, rather than its cause. Regarding an effect of the ablation, the acute success rate, repeated catheter ablation rate and VT recurrence rate were similar in both genders.

Study 2: The aim of this study was to compare the responses of heart rate variability (HRV) with two different types of hormonal substitution therapy (HT) in post-menopausal women (cross-sectional study) and to reveal an effect of HT shortly after beginning of its administration (follow-up study). Significantly lower portion of the low frequency power (LF) was found in premenopausal women when compared to untreated postmenopausal women and men. Treatment by estrogen only was proved to decrease the LF% while no effect on HRV was observed in women treated with

combination of estrogen and progesterone. Also the high frequency power (HF) was lower in postmenopausal women than in premenopausal women and women treated with estrogen only while in women treated with combined hormonal therapy the average value did not significantly differ from that of untreated postmenopausal women. The follow-up study also proved increase of HF already after two months of estrogen substitution therapy. These results suggest that higher vagal modulation of heart rate that seems typical for younger women becomes after menopause similar to that of men.

Keywords : sex differences, menopausal, cardiovascular disease, pathophysiology of menopause, sex hormones, estrogen, progesterone, androgens, testosterone.