

## Heart rate variability in normal-weight patients with polycystic ovary syndrome

Among the different methods for evaluating autonomic activity, the analysis of heart rate variability (HRV), a noninvasive approach by which quantitative information on the cardiac vagal and sympathetic control of heart rate (HR) can be obtained in various physiological and pathological conditions, has gained high popularity (1, 2). The analysis of HRV has been shown to have clinical utility in testing autonomic function and as a valuable predictor for various diseases (3).

Polycystic ovary syndrome (PCOS) is characterized by the association of endocrine disturbances and other disorders, including obesity, insulin resistance, metabolic syndrome, and hypertension, most of which are accompanied by enhanced sympathetic tone (4). The analysis of HRV has revealed that the autonomic control of HR in women with typical PCOS is altered, with significantly increased sympatho-vagal interaction, as estimated using the ratio of the LF and HF components of the HRV power spectra (5).

In the study by Kilit et al. (6), which was published in this issue of *The Anatolian Journal of Cardiology* entitled "Heart rate variability in normal-weight patients with polycystic ovary syndrome," a hypothesis that altered HRV described in PCOS can be ascribed to concomitant metabolic disorders was made. Thus, women with PCOS but normal body weight and BMI and no metabolic alteration were evaluated and compared with healthy women. The two groups differed only in testosterone and luteinizing hormone concentrations. HRV was analyzed in resting condition and during two maneuvers, namely controlled breathing and handgrip, which modify the level of autonomic system activity. No difference between PCOS and healthy women could be observed, with very similar changes in vagal and sympathetic HRV parameters induced by the two maneuvers. The authors concluded that the autonomic control of HR is not altered in PCOS when metabolic disorders are absent. Moreover, due to the lack of relation between HRV parameters and testosterone concentration, it was suggested that androgens have no major influence on HR modulation.

As indicated by the authors, the number of evaluated subjects was small and no comparison with overweight/obese women with PCOS was performed. An additional aspect that should be considered is that the women in this study could represent a selected group of lean women with PCOS because of their very low BMI (mean: 21 kg/m<sup>2</sup>) and normal estradiol concentration. In this study, the last factor, in particular, might have played a role in preserving the normal level of HRV in PCOS because of the documented influence of estrogen on HR modulation (7).

Further investigations are necessary to clearly define whether PCOS, per se, is associated with altered cardiac autonomic activity. Other potential factors should be taken into account while evaluating the subjects and interpreting the experimental data. For instance, the amount of physical activity regularly performed by women with PCOS can play a major role because of the multiple effects of exercise on the different PCOS features, including the autonomic function that has been found to improve after a short training in young women with PCOS (8).

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