

Polycystic ovary syndrome. Are we overlooking something?

To the Editor,

The article by Özkeçeci et al. (1) entitled "Heart rate variability and heart rate turbulence in patients with polycystic ovary syndrome" published in the *Anatol J Cardiol* 2016; 16: 323-7, draws attention to discussion of the role of the autonomic nervous system in patients with polycystic ovary syndrome (PCOS). Although there are overwhelming data that PCOS is associated with augmented sympathetic activity and depressed vagal tonus (2), there are few data supporting the observation of Özkeçeci et al. (1) demonstrating neutral effect of this disorder on autonomic nervous activity. This is similar to the debate surrounding interpretation of lipid metabolism disorders in PCOS. Many studies have described hypertriglyceredemia, low high-density lipoprotein cholesterol, and high low-density lipoprotein cholesterol. But these findings have not been consistently confirmed by other researchers. The question is, why? What are we missing?

High prevalence of central obesity, insulin resistance, and obstructive sleep apnea have led to speculation that sympathetic activity may be increased in PCOS (2). Targeting sympathetic nervous system might even be considered part of treatment protocol (2). Lean women with PCOS might have normal insulin levels and sensitivity (3). Meanwhile, majority of women with body mass index (BMI) >30 kg/m² have insulin resistance (3). Orio et al. (4) reported that patients with PCOS having BMI of 18–25 kg/m² had fasting insulin levels 5 times higher and homeostatic model assessment (HOMA) insulin resistance values 6 times higher than BMI-matched controls. These ratios were even larger for those with BMI >30 kg/m². Thus, even lean patients with PCOS may have insulin resistance. It is well-known that insulin resistance and hyperinsulinemia lead to elevated sympathetic outflow through actions in central brain receptors (5). Sympathetic activity might contribute to increased resistance (5). Özkeçeci et al. (1) failed to present HOMA values. Therefore, it is very probable, though not certain, that presence, absence, or degree of insulin resistance determines autonomic nervous activity, with particular emphasis on sympathetic system, in PCOS. Insulin resistance may, in part, also be the explanation for observed variability in lipid levels in different studies.

Definition and diagnostic criteria of PCOS are not uniform across the studies. The flexibility of Rotterdam criteria generated the possibility of 4 phenotypes. Phenotype D, which is without overt hyperandrogenism, is of particular concern. Androgens are generally considered to induce insulin resistance, and insulin resistance might contribute to hyper-androgenic and ovulatory dysfunction through multiple mechanisms (5). Phenotype-based separate analyses are not usually reported in literature. As a re-

sult, we don't know the relative contribution of each phenotype to the reported findings, which might, in part, have the potential to reveal the discrepancy in the research.

Finally, a simple marker of autonomic activity of cardiovascular system would be attractive, but human autonomic nervous system is highly complex structure rendering it inaccessible for examination with such an easy assay. Unfortunately, there is no gold-standard technique available to determine autonomic activity. In conclusion, one should consider the aforementioned discussion in order to interpret findings of a study investigating autonomic nervous system activity in patients with PCOS.

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Author's Reply

To the Editor,

We thank the author for the great interest in our study entitled "Heart rate variability and heart rate turbulence in patients with polycystic ovary syndrome" published in the *Anatol J Cardiol* 2016; 16: 323-7 (1).

There are few studies evaluating cardiac autonomic activity in patients with polycystic ovary syndrome (PCOS) (2–5). We believe that the very small sample size of study populations is the main reason for the difference in study results. Obesity, dyslipidemia, high blood pressure, insulin resistance, and serum androgen level are additional risk factors for cardiovascular disease. In some

studies, body mass index was higher in PCOS group, whereas it was similar in other studies (2, 4). Similar results were also true for insulin resistance, serum lipid level, and blood pressure variability. In light of these data, it is not clearly known whether or not cardiac autonomic activity is deteriorated in PCOS. If so, the underlying mechanism or mechanisms have not yet been identified.

In conclusion, we have the same opinions and concerns you expressed. We believe that these contradictions could be resolved with multi-center, large-scale, comprehensive studies.

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Postoperative cognitive dysfunction markers in coronary artery surgery

To the Editor,

We congratulate Öztürk et al. (1) on their study entitled "Effect of the type of cardiopulmonary bypass pump flow on postoperative cognitive function in patients undergoing isolated coronary artery surgery" published for the *Anatolian Journal of Cardiology* 2016 May 9 as an Epub ahead of print. We believe that we can offer the authors some points that will contribute to their study in which they compared use of pulsatile and non-pulsatile pumps in terms of post-operative cognitive dysfunction (POCD). Firstly, although the study is prospective, not very many data about the patients were analyzed. Some factors that are predictors of POCD should have been compared between the 2 groups. For example, we see that the authors did not analyze hypertension, diabetes

mellitus, duration of operation, period of anesthesia, preoperative low ejection fraction, low effort capacity, or preoperative European system for cardiac operative risk evaluation levels, which are described as predictor factors for POCD in several studies (2, 3). In order to compare the 2 groups, it should have been reported that there was no difference on the basis of these parameters. The authors, inspired by some previous studies, analyzed levels of S100 β and neuron-specific enolase biomarkers, which they thought might be associated with POCD. However, one of the most-used biomarkers in the literature associated with POCD is serum cortisone level (4). We are of the opinion that if the authors provide us with their ideas on this subject and if they can share any available data for these parameters, it will surely add value to their study.

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Author's Reply

To the Editor,

We thank the authors for their evaluation of our article entitled "Effect of the type of cardiopulmonary bypass pump flow on postoperative cognitive function in patients undergoing isolated coronary artery surgery" published in the *Anatolian Journal of Cardiology* 2016 (1).