LETTER TO THE EDITOR

Hormones, Fluid Retention, and ST Segment Changes

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To the Editor:

I read with great interest the article by Endres et al.,¹ on the role of estrogen and progesterone perturbations on the height of ST segments in young menstruating women. The authors start from a literature background on the effect of the sympathetic and vagal influences and testosterone, estrogen and progesterone modulation of the cardiac repolarization. In order to investigate the effect of the female hormones on the ST segment heights, they take advantage of the physiological changes hormones exhibit during the three phases of the menstrual period. To eliminate the confounding factors of the autonomic nervous system they implement double autonomic blockade with propranolol and atropine. Their findings in a complex ever changing milieu are of great interest and their study can be used as a model for other work delving in the effects of hormones on the ECG.

However looking at the Figure 1 V2 ECG complexes, I was wondering whether changes in the amplitude of the QRS complexes were related to variation on the positioning of the precordial leads, or some physiological effect exerted by the 3 different phases of the menstrual periods of their subjects. To avoid the confounding factor of variation in the precordial recording sites one can resort to a separate analysis of the limb leads ECG data.² I wonder why the authors elected to confine their measurements and analysis to the set of leads I, II, V2, V3, and V4. Also it is well known that menstruating women during the luteal phase of their periods experience fluid accumulation, for which many complain, because it is marked and visible,

or because they perceive it as a "bloating feeling." Is it possible that some of the effect of the difference in the ST segment heights during the three phases of the menstrual period in the study group were due to the perturbations in the fluid status? Perhaps the physiological peripheral edema experienced during the luteal phase could have an attenuating effect on the amplitude of QRS complexes and the height of the ST segments, as was shown previously in reference to the latter in patients with anasarca, or in patients prior to their hemodialysis.^{3,4} Such a premise can be easily tested providing that the authors have weights of their study subjects during the three phases of their periods. In the absence of such data, at least the authors can reanalyze their material using information from the entire ECG, and thus provide evidence that their conclusions remain identical.

REFERENCES

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