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Cardiovascular autonomic dysfunction in primary ovarian insufficiency: clinical and experimental evidence.

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Abstract

OBJECTIVE: Women with primary ovarian insufficiency (POI) present an increased risk for cardiovascular disease. In this study we tested the hypothesis that POI in women under hormone therapy (HT) are associated with vascular vasodilatation attenuation and cardiovascular autonomic dysfunction and these impairments are related to changes in systemic antioxidant enzymes. Furthermore, the possibility that ovarian hormone deprivation can induce such changes and that HT cannot reverse all of those impairments was examined in an experimental model of POI.

METHODS: Fifteen control and 17 patients with primary ovarian insufficiency receiving HT were included in the study. To test the systemic and cardiac consequences of ovarian hormone deprivation, ovariectomy was induced in young female rats that were submitted or not to HT. Spectral analysis of RR interval and blood pressure signals were performed and oxidative stress parameters were determined.

RESULTS: POI women under HT have increased mean arterial pressure (94 ± 10 vs. 86 ± 5 mmHg) despite normal endothelial and autonomic modulation of vasculature. Additionally, they presented impaired baroreflex sensitivity (3.9 ± 1.38 vs. 7.15 ± 3.62 ms/mmHg) and reduced heart rate variability (2310 ± 1173 vs. 3754 ± 1921 ms²). Similar results obtained in ovariectomized female rats were accompanied by an increased lipoperoxidation (7433 ± 1010 vs. 6180 ± 289 cps/mg protein) and decreased antioxidant enzymes in cardiac tissue. As it was observed in women, the HT in animals did not restore hemodynamic and autonomic dysfunctions.

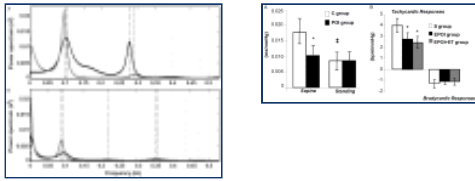
CONCLUSION: These data provide clinical and experimental evidence that long term HT may not restore all cardiovascular risk factors associated with ovarian hormone deprivation.

KEYWORDS: Primary ovarian insufficiency; autonomic nervous system; endothelium; hormones; oxidative stress; rats; women

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