

Power spectral analysis of cardiovascular autonomic functional modulation in response to acute mental stress in polycystic ovarian syndrome—an observational study

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ABSTRACT

Background: Patients with polycystic ovary syndrome (PCOS) can experience cardiac autonomic dysfunction. Heart rate variability (HRV) is used in assessing cardiac autonomic functions. **Aims and Objective:** To evaluate cardiovascular autonomic functional modulation by using HRV during rest and acute mental stress in female subjects with PCOS. **Materials and Methods:** Thirty patients with PCOS (mean age 27.13 ± 4.53 years) and 30 healthy female volunteers who were matched for body mass index and age (mean age 25.87 ± 6.54 years) were enrolled in the study. The study was conducted during the follicular phase for control subjects and in amenorrhic phase for subjects with PCOS. Frequency-domain power spectral analysis of HRV was carried out using nonparametric method of fast Fourier transform using Kubios HRV analysis software. Mental stress was induced by arithmetic mental challenge under time pressure. **Result:** On comparison with the control subjects, female subjects with PCOS demonstrated a significant reduction in total power of HRV and high frequency (Hf) during rest ($p = 0.016$) ($p = 0.00$) and significant increase in low frequency (Lf) ($p = 0.0134$) and Lf/Hf ratio ($p = 0.000$). There is significant reduction in total power of HRV, Hf (nu), and Lf/Hf ratio during stress in subjects with PCOS when compared with control subjects. **Conclusion:** We conclude that female subjects with PCOS exhibit altered cardiac autonomic modulation during rest in terms of decreased parasympathetic tone and increased sympathetic tone. They also show failure to cope up to mental stresses as shown by insufficient sympathetic response to stress.

KEY WORDS: Stress; ParasympatheticTone; Hyperandrogenism

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