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The resting metabolic rate is not altered in women with polycystic ovary syndrome: a sensewear armband study.

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Context: Excessive body weight worsens the reproductive and general health of PCOS women. However it is still unclear why obesity is highly prevalent and difficult to treat in this population. The presence of altered energy expenditure was suggested, but data are inconsistent. The SenseWear Armband (SWA) is a reliable metabolic holter, able to estimate the resting metabolic rate (RMR), which accounts for 80% of total energy expenditure in humans. It was never applied in PCOS women.
Objective: To evaluate RMR with the SWA and its correlation with the anthropometric features and insulin metabolism in PCOS women compared with controls.
Methods: Monocentric observational prospective cohort study. Subjects selected for the study were hospitalized for three days. The clinical and laboratory work up was conducted during the early follicular phase (days 3-7) of the menstrual cycle.
Patients: 107 Caucasian subjects diagnosed with PCOS, according to Rotterdam Consensus diagnostic criteria and 31 healthy, age-weight matched control women. (Median age PCOS 26.0 ± 9.2 years, controls 25.5± 8.5 years; median BMI-body mass index PCOS 26.4± 9.4 kg/m2, controls 27.2± 12.8 kg/m2).
Interventions: Energy expenditure measurements through a 48-hours SWA monitoring. Hormonal assessment, insulin metabolism defined by HOMA-IR and OGTT with AUC insulin/240', anthropometric features as BMI and WHR.
Main outcome measures: RMR in PCOS and controls populations, divided according to BMI, body fat distribution, insulin metabolism.
Results: Median RMR resulted similar in PCOS and control women: 1520.0 ± 248.00 kcal/day vs 1464.0 ± 332.70 kcal/day (p =0.472), even after adjusting for obesity, fat distribution, hyperinsulinemia and insulin resistance (respectively p= 0.164, p=0.317, p=0.377, p=0.232). RMR resulted directly correlated with BMI, WHR, estradiol, total cholesterol, triglycerides, basal blood glucose, basal insulin, AUC insulin 240' and HOMA, while inversely with SHBG. In the subgroup of patients with WHR>0,85, PCOS women showed a significantly lower RMR compared with controls.
Conclusions: Our study confirms that PCOS women show a similar capacity of consuming energy compared with the general population. The reasons accounting for the higher prevalence of excessive body weight in this syndrome are still elusive. However, research efforts are needed to cast a light on the role of additional factors such as body fat distribution, neuropeptides imbalances and psychological asset.

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