

P35. Melatonin as a new pathogenetic factor in the development of anovulation in polycystic ovary syndrome

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Context. Our biological and social life is subject to the laws of rhythm. The biological rhythm is a reflection of the rhythm of the external environment (changes in the seasons, day and night). This is a way of adapting to external factors, allowing to fully exist in the world. Urbanization and accelerating the pace of social life lead to desynchronosis - a phenomenon in which the phase relationship of biorhythms disagrees. Melatonin regulates the "sleep-wake" cycle and reproductive function. It is one of the main components of the antioxidant system. Disrupted balance of the antioxidant system may worsen the normal growth and maturation of follicles. Women with polycystic ovary syndrome (PCOS) have high content of lipid peroxidation products, causing the damage of the oocytes. Oxidative stress is ubiquitous in patients with PCOS.

Objective. To determine the level of melatonin in various biological fluids in women with PCOS.

Methods. Examination of melatonin level in blood sampling at 08.00 and in follicular fluid by chromatography-mass spectrometry; determining the circadian rhythm of melatonin in saliva every 4 hour and of 6-sulfatoxymelatonin in the daily urine.

Patients. 60 patients with PCOS aged 17 to 35 years. PCOS was diagnosed on the basis of ESHRE/ASR (2007) criteria. The control group: 60 healthy women without menstrual disorders.

Intervention. Sampling a follicular fluid during laparoscopic ovarian drilling for the treatment of infertility in women with PCOS. Control group: women who underwent a diagnostic laparoscopy for the tubal factor of infertility.

Results. Patients with PCOS had significantly higher levels of 6-sulfatoximelatonin in urine, nocturnal melatonin in saliva (03.00) and melatonin in the blood ($p<0.05$) compared with the control group. Melatonin level in a follicular fluid was lower in women with PCOS compared with the control group. There was a significant correlation of melatonin level in saliva at 03.00 and 6-sulfatoximelatonin in daily urine ($p < 0.05$).

Conclusions. Reduced melatonin concentration in a follicular fluid in women with PCOS disrupts the maturation of follicles and leads to anovulation, while a down regulation increases melatonin level in the blood. Correlation of melatonin levels in saliva and urine indicates the systemic effect of the hormone in women with PCOS.