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PSYCHOLOGICAL STRESS CAUSES RELATIVE INFERTILITY THROUGH DIRECT CHANGE IN THE FREQUENCY PATTERN OF GnRH RELEASE FROM THE HYPOTHALAMUS

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Objectives: Evaluation of oscillation pattern of GnRH release by the hypothalamus in different mental states

Materials and methods: Twenty two patients were evaluated by a computer algorithm to find oscillation of LH/GnRH pulsation measured on four sessions (day 6 and 14) every 10 minutes within two consecutive cycles in addition to the MCMI-III and Hamilton test.

Results: The pattern of oscillation was indirectly correlated with Hamilton scale and the anxiety state and showed statistically significant lowering of frequency during anxiety and depression states. Besides, the slope of GnRH between two consecutive sessions ($d_0\text{GnRH}_0/\text{GnRH}_1dt$) showed also a prominent reduction and even flattening. In addition the time to ovulation was also postponed in cycles with prominent anxiety.

Conclusions:

1. Psychological stress exerts its effect through a reduction of pulsation frequency in GnRH release.
2. Pattern of GnRH pulsation changes in the range of $\frac{1}{4}$ to $\frac{1}{15}$ of the baseline and external stimuli have strength of changing hormonal milieu in this range.
3. MCMI-III is an excellent tool for evaluating psychological state of the patient.
4. Patients with borderline, schizoid, dependent, depressed and passive aggressive personality suffer most from irregularity of menstruation cycles.
5. Patients with chronic major depression are subject to menstrual irregularity highest during stabilization of disease and in the early phases of recovery after treatment with SSRI.
6. Treatment of depression/anxiety causes a reduction of menstrual cycles length.
7. Measurement of GnRH, FSH, LH and Estradiol on two sessions one week apart is a nice marker for regularity and ovulation.