

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

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Introduction: The mechanism of psychological stress induced infertility is unknown.

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

Aim: To clarify whether hypothalamic oscillation is the target of stress.

Methods: Twenty two patients were evaluated on four different sessions (day 6 and 14) within two consecutive cycles in addition to the MCMI-III and the Hamilton's depression scale.

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 ($d_0\text{GnRH}_0/\text{GnRH}_1 dt$) 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. The pattern of GnRH pulsation changes in the range of $\frac{1}{4}$ to $\frac{1}{15}$ of baseline by external stimuli.
3. Patients with borderline, schizoid, dependent, depressed and passive aggressive personality suffer most from irregularity of menstruation cycles.
4. Patients with chronic major depression are subject to menstrual irregularity highest during stabilization of disease and in the early phases of recovery due to drug treatment with mostly SSRI.
5. Treatment of depression of anxiety causes a reduction of menstrual cycles even to very short ranges.
6. Measurement of GnRH, FSH, LH and Estradiol on two sessions one week apart is a nice marker for regularity and ovulation.