

## PMS: Beyond Hormones

**Premenstrual** syndrome is the name for a collection of physical and emotional symptoms that many women experience in the days or weeks leading up to their menses. While hormone imbalances are an obvious contributing component to these symptoms, new evidence points to neurotransmitter levels as a significant factor in the presenting symptom picture.

In the June 2012 edition of *Menopause International*, UCLA researchers reported their findings on the pathophysiology of PMS and premenstrual dysphoric disorder as it relates to neurotransmitters. Clinically it has been well documented that premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PDD) are triggered by hormonal events ensuing after ovulation. Excerpted from this article's abstract it is reported:

PMS and PDD symptoms can begin in the early, mid or late luteal phase and are not associated with defined concentrations of any specific gonadal or non-gonadal hormone. The symptoms of the premenstrual disorders are related to the production of progesterone by the ovary. The two best-studied and relevant neurotransmitter systems implicated in the genesis of the symptoms are the GABAergic and the serotonergic systems. Metabolites of progesterone formed by the corpus luteum of the ovary and in the brain bind to a neurosteroid-binding site on the membrane of the gamma-aminobutyric acid (GABA) receptor, changing

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its configuration, rendering it resistant to further activation and finally decreasing central GABA-mediated inhibition. By a similar mechanism, the progestogens in some hormonal contraceptives are also thought to adversely affect the GABAergic system. The lowering of serotonin can give rise to PMS-like symptoms and serotonergic functioning seems to be deficient by some methods of estimating serotonergic activity in the brain; agents that augment serotonin are efficacious and are as effective even if administered only in the luteal phase.

All changes in mental and emotional status and sense of well-being are complex. The impact of hormones on the neurotransmitter pathways re-emphasizes the clinical importance of comprehensive testing methods and treatment protocols that reflect an integrated neuroendocrine system. In addition to testing and supporting balanced hormones in patients experiencing PMS, evaluation of their individual GABA and serotonin levels along with other neurotransmitter levels will provide additional clinical benefit.

## Resources

Rapkin AJ, Akopians AL. **Pathophysiology of premenstrual syndrome and premenstrual dysphoric disorder.** Menopause Int. 2012 Jun;18(2):52-9.

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