



Impaired melatonin secretion may play a role in premenstrual syndrome

MONTREAL, December 19, 2012 – A new study by Douglas Mental Health University Institute researchers shows altered body rhythms of the hormone melatonin in Premenstrual dysphoric disorder (PMDD) women with insomnia. This finding may help explain some of the sleep disruptions experienced by women with PMDD, also known as premenstrual syndrome. PMDD is a mood disorder which appears in the week preceding menses, and affects about 3-8% of women. PMDD sufferers can experience depression, tension, and irritability of sufficient intensity to interfere with daily activities and relationships. Disturbed sleep is also a common symptom of the disorder, with up to 70% of patients frequently reporting either poor sleep quality with increased awakenings or excessive sleepiness during the symptomatic phase.

First study in a highly controlled time-isolation environment

Dr. Diane B. Boivin's team at the Centre for Study and Treatment of Circadian Rhythms at the Douglas Institute investigated how rhythms of the hormone melatonin vary across the 24-hour day in a group of women with PMDD and a group of healthy controls. In the study, participants underwent two 24-hour laboratory visits, once during the pre-ovulatory follicular phase and again during the post-ovulatory luteal phase of the menstrual cycle. Each visit consisted of intensive physiological monitoring under highly controlled time-isolation conditions. During this time, blood samples were collected to determine circulating plasma melatonin levels.

The main finding was that compared to healthy controls, PMDD women had significantly decreased melatonin secretion levels during the night-time hours. PMDD women also had a further reduction of melatonin levels during their symptomatic luteal phase compared to the asymptomatic follicular phase.

Clinical implications of reduced melatonin in PMDD

The prevalence of insomnia and depression are both about twice as high in women than in men, yet the reasons for this are still not fully understood. The current results highlight the importance of considering melatonin and circadian rhythms as factors leading to PMDD, with many clinical implications.

“Clearly understanding the mechanisms and specific pathophysiology of PMDD can help improve treatments, including both pharmacologic and non-pharmacologic approaches, for this disorder”, said lead author Dr. Ari Shechter.

By targeting the melatonin system specifically, or, more broadly, the circadian system, clinicians may be able to better treat symptoms, including insomnia, in PMDD.

About the study:

The article, “Pilot investigation of the circadian plasma melatonin rhythm across the menstrual cycle in a small group of women with premenstrual dysphoric disorder”, was authored by Ari Shechter, Paul Lespérance, N.M.K. Ng Ying Kin, and Diane B. Boivin. It is published in PLOS ONE and is available online at:

<http://dx.plos.org/10.1371/journal.pone.0051929>

Partners in research:

- The Douglas Institute Foundation is proud to support Diane B. Boivin, M.D., Ph.D., for her research in mental health. The Foundation thanks its donors and volunteers for their generosity and thoughtfulness. Invest in healthy minds.
- This study was funded by the Canadian Institutes of Health Research and the Fonds de la recherche en santé du Québec.
- Ari Shechter’s current affiliation is with the New York Obesity Nutrition Research Center, St. Luke’s-Roosevelt Hospital, New York, NY.

About the Douglas Institute – www.douglas.qc.ca

The Douglas is a world-class institute affiliated with McGill University and the World Health Organization. It treats people suffering from mental illness and offers them both hope and healing. Its teams of specialists and researchers are constantly increasing scientific knowledge, integrating this knowledge into patient care, and sharing it with the community in order to educate the public and eliminate prejudices surrounding mental health.

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