Menstrual cramps may alter brain structure

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Primary dysmenorrhea (PDM), or menstrual cramps, is the most common gynecological disorder in women of childbearing age. Lower abdominal pain starts with the onset of menstrual flow and this ongoing pain stimulus can cause alterations throughout the nervous system. In a study scheduled for publication in the September issue of *PAIN*, researchers report abnormal changes in the structure of the brain in PDM patients, whether or not they are in fact experiencing pain.

Lead investigator, Professor Jen-Chuen Hsieh, MD, PhD, Institute of Brain Science, National Yang-Ming University, Taipei, Taiwan, commented, "Our results demonstrated that abnormal GM [gray matter] changes were present in PDM patients even in absence of pain. This shows that not only sustained pain but also cyclic occurring menstrual pain can result in longer-lasting central changes. Although the functional consequences remain to be established, these results indicate that the adolescent brain is vulnerable to menstrual pain. Longitudinal studies are needed to probe hormonal interaction, fast-changing adaptation (intra-menstrual cycle) and whether such changes are reversible or not."

32 PDM patients and 32 age- and menstrual-cycle-matched controls participated in the study. MRI scans of each subject were obtained when the PDM patients were not experiencing pain, and maps of gray matter (GM) were created. Both the total GM volume and the GM volume of specific brain areas were determined for both PDM patients and controls.

In these anatomical maps, significant GM volume changes were

observed in the PDM patients. Abnormal decreases were found in regions involved in pain transmission, higher level sensory processing, and affect regulation while increases were found in regions involved in pain modulation and in regulation of endocrine function.

More information: "Brain morphological changes associated with cyclic menstrual pain" by Cheng-Hao Tu, David M. Niddam, Hsiang-Tai Chao, Li-Fen Chen, Yong-Sheng Chen, Yu-Te Wu, Tzu-Chen Yeh, Jiing-Feng Lirng, and Jen-Chuen Hsieh. It appears in PAIN, Volume 150, Issue 3 (September 2010), Elsevier. DOI: 10.1016/j.pain.2010.05.026

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