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Fetal Exposure to Antidepressants May Alter Corpus Callosum Microstructure

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By Carole Van Sickle Ellis

SAN FRANCISCO -- May 10, 2017 -- Selective serotonin reuptake inhibitors (SSRIs) may affecting white-matter brain development and alter the development of the fetal corpus callosum, according to results of a prospective study presented at the 2017 Annual Meeting of the Pediatric Academic Societies/American Society of Pediatric Nephrology (PAS/ASPN).

Under the guidance of Dan Rurak, BSc, MSc, DPhil, British Columbia Childrens Hospital, Vancouver British Columbia, a team of researchers conducted magnetic resonance imaging on 18 six-day-old SSRI-exposed infants, as well as 32 non-exposed, age-matched infants (some of whom had mothers with depression during pregnancy who did not take SSRI depressants).

The team found significant interaction between prenatal maternal mood and SSRI-exposure status (adjusted $R^2 = 0.20$, $P < .001$).

Based on findings from fractional anisotropy (FA) in the genu specifically, there also was a significant interaction between SSRI exposure, prenatal maternal Hamilton Rating Scales for Depression (HAM-D) scores, and the callosal region, noted lead author Kayleigh Campbell, BScH-MSc, University of British Columbia, Vancouver. “Adjusted FA in the genu is significantly higher in SSRI-exposed neonates, but significantly lower in those exposed to prenatal maternal depression alone.”

The team evaluated microstructural regions in the genu, body, and splenium in the corpus callosum of 59 of the 60 infants using a region-of-interest approach. The researchers obtained maternal mood measures for the entire population using the HAM-D.

Because “the neonate corpus callosum microstructure is associated with in utero SSRI exposure and prenatal maternal depression, early maturational processes in this region are sensitive to altered 5-hydroxytryptamine signaling while in utero,” noted Campbell. “These findings -- together with disrupted white-matter

microstructure in the genu of preterm infants -- suggest that development of [the corpus callosum] may be sensitive to early adversity."

During pregnancy, nearly 1 in 5 (18%) women experiences mood disturbances, commonly treated with SSRI antidepressants, making it vital to investigate in utero effects of these medications, the researchers concluded.

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[Presentation title: In Utero Antidepressant Exposure and Maternal Depression Are Associated with Corpus Callosum Microstructure in Term-Born Neonates. Abstract 2700555]