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Et al.

DISRUPTED RESTING-STATE FUNCTIONAL CONNECTIVITY IN MEDICATION-FREE WOMEN WITH POSTPARTUM DEPRESSION

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Background: Women are at increased risk of developing depression in the postpartum, a time of gonadal steroid flux. Abnormalities of gonadal steroids have been identified in some depressed women at times of reproductive flux. Gonadal steroids modulate corticocortical and corticolimbic functional connectivity (FC) in healthy, non-puerperal subjects; however there are no published studies of FC in postpartum depression (PPD).

Methods: Healthy comparison (HCS) (n=9) and medication-free subjects with unipolar PPD (n=8) were scanned at 3-9 weeks postpartum (using 3T Philips MRI) while 'at rest' with eyes open. Data analysis was carried out using SPM-8 and Data Processing Assistant for Resting-State fMRI (DPARSF) to perform seed based resting-state functional connectivity (rs-FC) analysis. Seeds were placed at bilateral anterior cingulate (ACC) and dorsolateral prefrontal cortices (DLPFC), hippocampi (HIPP) and amygdalae (AMYG). Correlation coefficients obtained from individual subject analysis were used in performing two-sample t-test to compare the two cohorts.

Results: Functional connectivity maps revealed a more distributed pattern of connectivity with each seed (i.e. ACC, DLPFX, HIPP, and AMYG) for HCS than PPD. In PPD subjects as compared to HCS, there was attenuation of rs-FC between corticocortical and corticolimbic areas.

Conclusions: In the early postpartum period, rs-FC patterns are disrupted in women with PPD in brain regions important for cognition, affect and the stress response. Larger studies are necessary to elucidate the role of disrupted neural connections in the pathophysiology of PPD and the potential modulatory role of gonadal steroids in women.

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