

P-14.017 Pharmacological fMRI comparing escitalopram and citalopram

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Objective: Pharmacological functional magnetic resonance imaging (phfMRI) is a promising new tool to measure the effects of study drugs on task-specific neural activation with high spatial and sufficient temporal resolution. Here we investigated differences in brain activation by short-term administration of two frequently prescribed selective serotonin reuptake inhibitors.

Methods: 18 healthy subjects underwent 3 fMRI sessions in a randomized, placebo-controlled, double-blind, cross-over repeated measures design. Escitalopram (10 mg/d), citalopram (20 mg/d) and placebo were administered for 10 days each after a period of at least 3 weeks free of drugs. During fMRI, the subjects performed an emotional discrimination task of facial expression and a sensorimotor control task. Main drug effect was calculated in SPM using a whole-brain ANOVA. Post-hoc paired t-tests were performed to reveal significant differences between escitalopram and placebo, citalopram and placebo, and escitalopram and citalopram.

Results: Significant effects of escitalopram and citalopram administration on task-specific neural reactivity in the steady state were found in the medial frontal gyrus, amygdala, parahippocampus, fusiform cortex, middle temporal gyrus, but not in primary and secondary visual cortices strongly activated by this task (ANOVA). Both escitalopram and citalopram compared to placebo decreased the activation in the right amygdala and left parahippocampus (t-tests). We found significant differences between escitalopram and citalopram in the parahippocampal and fusiform cortices (escitalopram > citalopram) and in the medial frontal gyrus (escitalopram < citalopram).

Conclusion: Drug effects were area-specific focused on brain regions known for dense serotonergic projections. Both escitalopram and citalopram attenuated the reactivity of the right amygdala and left parahippocampus to emotional versus neutral stimuli indicating specific effects on emotional processing. The significant more pronounced inhibitory modulation of the medial frontal gyrus in the escitalopram condition might be a biological explanation for response differences between both study drugs demonstrated in clinical trials.

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P-14.019 The timing of prenatal immune challenge determines the extent of postnatal white matter microstructural anomalies in a mouse model of schizophrenia

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Objective: Neurodevelopmental disorders like schizophrenia have onset early in fetal life and epidemiological studies implicate prenatal maternal inflammation as a risk factor. Human studies indicate white matter connections are disrupted, but direct evidence for a fetal

trigger of brain structural changes is sparse. In this study we tested the hypothesis that maternal immune activation causes post-natal white matter microstructural anomalies in offspring relevant to schizophrenia. We have previously shown that early pregnancy immune challenge triggers more extensive anatomical and behavioural abnormalities than later exposure. Therefore we examined the effects of maternal inflammation in early and late gestation on white matter microstructure in the offspring using advanced in-vivo diffusion tensor imaging (DTI).

Methods: We used automated voxel-based morphometry (VBM) of in-vivo DTI data to map fractional anisotropy (FA, directional diffusion of water) in white matter of adult offspring exposed to either viral mimic PolyI:C or saline (control) on early (day 9) or late (day 17) gestation. In addition we conducted a preliminary immunohistochemical exploration using the oligodendrocyte marker CNPase to determine whether myelination processes might contribute to any changes in FA observed.

Results: FA was lower in MIA exposed offspring throughout fronto-striatal-limbic circuits and in the corpus callosum. Regions with lower FA were more extensive in the early exposed group. In both groups there were regions with increased FA but again, these were more extensive in the early exposed group. Preliminary immunohistochemical evidence revealed reduction in the oligodendrocyte marker CNPase in mice exposed to MIA, consistent with a white matter structural insult affecting myelination.

Conclusion: The present results provide direct experimental evidence that prenatal inflammation causes white matter microstructural abnormalities analogous to those found in schizophrenia. Maternal inflammation earlier in gestation precipitates more extensive changes in offspring, suggesting that the fetus is more vulnerable to environmental insults associated with schizophrenia early in development.

Policy of full disclosure: None.

P-14.020 Acute basal ganglia infarcts in poststroke fatigue: An MRI study

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Objective: A total of 334 Chinese patients with acute ischemic stroke consecutively admitted to the acute stroke unit of a university-affiliated regional hospital in Hong Kong participated in the study.

Methods: At admission, a host of demographic and clinical characteristics was collected and the number and location of acute infarcts were evaluated with MRI. All participants were assessed for PSF with the Fatigue Severity Scale (FSS) 3 months after their index stroke. PSF was defined as a mean FSS score of 4.0 or more. Depressive symptoms were measured by the Geriatric Depression Scale (GDS).

Results: Seventy-eight (23.4%) patients had PSF. In the univariate analysis, the PSF group included more females, had higher GDS scores, and a higher number of acute infarcts, and the PSF patients were more likely to have acute infarcts at the BG. Acute BG infarct remained an independent predictor of PSF in the multivariate analysis.

Conclusion: In conclusion, these results suggest that BG infarcts may play a role in the development of PSF.

Policy of full disclosure: jinyan lu.

P-14.021 Serotonin-1A receptor binding in the hypothalamus predicts the plasma level of dehydroepiandrosterone sulfate in healthy women

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Objective: Serotonin modulates the activity of the hypothalamic-pituitary-adrenal (HPA) axis to a big part through the serotonin-1A receptor (5-HT_{1A}). Disturbances in the HPA-axis, as well as changes of the 5-HT_{1A} receptor binding potential (BP) in distinct brain regions are strongly associated to depression and anxiety disorders. Therefore, the rationale of this positron emission tomography (PET)