

P-802 - THE STRUCTURE AND CONNECTIVITY OF BRAIN REGIONS INVOLVED IN EMOTION PROCESSING ARE MODULATED BY 5HTTLPR X COMT EPISTASIS

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Introduction: Imaging genetic studies provide for the possibility to uncover endophenotypes for neuropsychiatric disorders.

Objectives: To establish neuroimaging correlates of the joint effect of serotonergic (5-HTTLPR) and dopaminergic (COMT) genes.

Aims: To examine an interaction of 5-HTTLPR and COMT markers on effective connectivity and regional brain volume in healthy individuals.

Methods: Ninety one healthy Caucasian adults underwent functional magnetic resonance imaging (fMRI) and structural MRI. In fMRI study the participants were presented with video clips of dynamic emotional facial expressions of fear, sadness, happiness and anger. The effective connectivity within the emotion processing circuitry was assessed with Granger causality method. In the structural neuroimaging part of the study we applied diffeomorphic anatomic registration through exponentiated Lie algebra (DARTEL) whole-brain voxel-based morphometry (VBM).

Results: In fear processing condition, an interaction between 5-HTTLPR (*S*) and COMT(*met*) low activity alleles was associated with reduced effective connectivity within the facial emotion processing circuitry.

The results of the structural data analysis showed an interaction of COMT and 5-HTTLPR genotypes with regional grey matter volume in bilateral parahippocampal gyrus, amygdala, hippocampus, cerebellum and right putamen. In particular, the gray matter volume in these regions was smaller in individuals who were *both* COMT-*met* and 5-HTTLPR-*S* carriers, as compared to those carrying either 5-HTTLPR-*L/L*, or COMT-*val/val*.

Conclusions: The epistatic effect of COMT-*met* and 5-HTTLPR-*S* markers impacts on both the brain function and structure and may underlie an inefficient emotion regulation.