Article: 0784
Topic: EPW21 - e-Poster Walk Session 21: Neuroimaging

Genetic and Environmental Neuroimaging Markers for Major Depression

A. Carballedo[1], M. Doyle[1], D. Lisiecka[1], H. McCarthy[1], V. O'Keane[1], T. Frodl[1]

[1]Institute of Neuroscience, Trinity College Dublin, Dublin, Ireland

Environment early in life may have a long-lasting impact on mental health through epigenetic mechanisms. We studied the effect of early life adversity (ELA) on high risk subjects for Depression (MDD). 20 unaffected first degree relatives (FHP) and 20 controls (FHN) underwent high resolution MRI. We used CTQ questionnaire to assess ELA. Manual tracing of hippocampal subregions and voxel-based morphometry (VBM) analysis were used. We concluded that FHP individuals had reduced volume of those brain areas of emotional processing, in particular if they had a history of ELA. This suggests that ELA might influence brain structure via epigenetic mechanisms and structural changes may precede MDD.

We determined how the brain-derived neurotrphic factor (BDNF) Val66Met polymorphism and ELA affect volumetric measures of hippocampus. 62 MDD patients and 71 healthy controls underwent high-resolution MRI. We manually teaced hippocampi, assessed childhood adversity with CTQ and genotyped Val66Met BDNF. Met-allele carriers showed significantly smaller hippocampal volumes when they had a history of ELA, both in patients and controls. Our results highlight how relevant stress-gene interactions are for hippocampal volume reductions.

Another 37 patients with MDD and 42 healthy participants underwent Diffussion Tensor Imaging (DTI). Deterministic tractography was applied and Val66Met BDNF polymorphism genotyped. Patients carrying the BDNF met-allele had smaller FA in Uncinate Fasciculus (UF) compared to homozygous for val-allele and controls. The met allele of the BDNF polymorphism seems to render subjects more vulnerable for dysfunctions associated with the UF, a brain region which is very closely related to emotional and cognitive function.

https://doi.org/10.1016/S0924-9338(15)30612-X Published online by Cambridge University Press