BRAIN STRUCTURAL ABNORMALITIES IN MEDIAL TEMPORAL LOBE ARE ASSOCIATED WITH MOOD AND ANXIETY IN METHADONE MAINTENANCE TREATMENT

S. Tolomeo[1], A. Baldacchino[1], K. Matthews[1], J. Steele[1]

[1]Neuroscience, Medical Research institute, Dundee, United Kingdom

Introduction: Several brain circuits are relevant in the neurobiology of addiction. Here we want to highlight symptoms related to the domains of mood, anhedonia and anxiety that may precede drug abuse and represent a specific risk factor for addiction. The mood regulation circuit that contributes to regulation of stress reactivity and the interoception circuit that contributes to awareness of drug craving and mood also participate in addiction but their involvement in the human brain has been much less investigated.

Aims: Here we aim to investigate mood and anxiety in opiate dependent, treatment-seeking patients receiving Methadone Maintenance Treatment, to test hypothesis of regional grey matter reduction correlating with mood and anxiety.

Methods: Cambridge Gambling Task (CGT) data were acquired from 30 patients receiving MMT and 23 controls. T_1 weighted Magnetic Resonance Images were acquired from a representative subset of these volunteers.

Results: MMT patients exhibited grey matter reductions in the orbito-medial prefrontal cortex and basal ganglia. Additionally, patients exhibited significant abnormalities in the clinical rating scales BDI, Anhedonia, HAD-Anxiety, IDS and Snaith Hamilton. Increased BDI, HAD-Anxiety and IDS correlated with grey matter reductions in the hippocampus, amygdala, bed nucleus of stria terminalis and insula. Increased Snaith Hamilton correlated with grey matter reductions in periaqueductal gray, ventral tegmental area and nucleus caudate.

Conclusions: These findings support an interpretation of a neurobiological underpinning of mood and addiction. However, the anatomically restricted correlates with mood and anxiety suggest that a rationale for adopting a mood addiction model should be further investigated.