

Short and long Echo 1H spectroscopy in predominantly opiate addicts : A study in an Egyptian sample

Hatata, H. Azmi, M.

Current Psychiatry. Ain Shams University (Print)

2008 v15 n2

This work aimed to study the concentrations of various metabolites in the anterior Cingulate Cortex (ACC) and Pre Frontal Cortex (PFC), which are brain regions important to executive cognitive functions (ECF) for a hypothesized difference between both patients and control groups and to identify a relevant biomarker that is sensitive and specific that could enhance the understanding of the pathophysiology of substance abuse. Eleven recently detoxified opiates subjects (addict group), thirteen long-term abstinent opiate subjects (recovery group) and five control subjects (control group) had proton magnetic resonance spectroscopy (1HMRS) performed on the two brain regions [the Anterior Cingulate Cortex (ACC) and Pre Frontal Cortex (PFC).] The N-acetyl aspartate/creatine ratio (NAA/Cr) in anterior Cingulate Cortex (ACC) was significantly reduced when recovery and control groups were compared as well as the recovery and addict groups were compared in the Pre Frontal Cortex (PFC). It was found that the (NAA/Cr) ratio was significantly increased ; also, a highly significant reduction in the myo-inositol/creatine ratio (MI/Cr) and significant reduction in the (Cho/NAA) were found.

While, in Anterior Cingulate Cortex (ACC), there was significant reduction in (MI/Cr) ratio. When both addict and control groups were compared in PFC, there were highly significant increase in MI/Cr ratio and significant increase in Cho/Cr ratio in the addict group. While, there was significant increase in MI/Cr ratio in ACC region in the addict group. The observation of increased MI/Cr, Cho/Cr and Cho/NAA ratios in recently detoxified opiate addicts are compatible with the possibility of neuropathological insult due to the substance. On the other hand, the decline of MI/Cr ratio in the recovery group suggests the possible recovery after long term abstinence, but unfortunately, the persistence of low NAA/Cr ratio in recovery ,addict as compared to control group over 12 months abstinence suggests that full recovery may not occur, or needs longer duration of abstinence.