

## **Abstract**

Longitudinal changes in regional brain volumes in Type A alcohol-dependent patients: a 7-year MRI follow-up study.

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**Background:** Although there are numerous reports of neuropsychological and neuroimaging investigations in alcohol dependence, longitudinal studies are scarce. This work investigated the evolution of magnetic resonance imaging in brain volumes over a long follow-up period (7 years), in Type A alcohol-dependent patients i.e., without psychiatric or somatic comorbidity and whose addiction had started late. In line with the literature, we hypothesized that long-term abstinence would lead to an at least partial recovery of the prefrontal cortex, cingulate cortex, and of white matter (WM) volume reductions. We investigated the long-term changes in grey matter (GM) and WM regional volumes by comparing longitudinally the followed-up subgroups of abstainers, relapsers, and controls.

**Methods:** 26 patients and 24 healthy controls were assessed at baseline using structural MRI and voxel-based morphometry, among which 17 patients and 6 controls were re-evaluated 7 years later. At follow-up, three groups were compared: abstainers (n = 11, more than 2 years of abstinence), relapsers (n= 6, less than 2 years of abstinence), and controls (n= 6).

**Results:** The longitudinal analysis of neuroimages in which relapsers were compared to abstainers, demonstrated the recovery of initial GM volumes in the bilateral middle and inferior frontal cortex, as well as the bilateral middle cingulate cortex, whereas no recovery was found in sub-cortical regions. Moreover, we found a WM recovery in the corpus callosum and in anterior and superior regions between the frontal cortex and the striatum.

**Discussion:** The results of brain volumes analyses in abstainers confirm previous findings in the literature that examined shorter time-periods (generally up to 2 years). These results support the crucial role of abstinence in fronto-limbic GM and WM volumes recovery in alcohol-dependent type A patients.

The authors declare a potential conflict of interest and state it below

CM, EA, and JLM have no conflict of interest to report.

AB has given talks for Lundbeck, Mylan, Merck-Serono, Ethypharm and Bristol-Myers Squibb and is a member of the Indivior board.