Relationship between liver function and brain shrinkage in patients with alcohol dependence

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Objective:
Oxidative stress is one of the mechanisms to explain alcohol-induced brain shrinkage and also one of the causes of alcohol-induced hepatotoxicity. The study aim was to assess the correlation between liver function and brain volume indices in patients with alcohol dependence.

Methods:
We recruited 124 patients with alcohol dependence and 111 healthy control subjects from NIAAA/NIH inpatient alcohol treatment program. Gamma glutamyltransferase (GGT), aspartate aminotransferase (AST), and alanine aminotransferase (ALT) were assayed shortly after admission. MRI examination was conducted in both groups. Ratios were created between a volume of interest and the remainder of the intracranial volume (ICV minus the volume of interest).

Results:
Table 1 shows the demographic and clinical characteristics of patient and controls.
Table 2 shows significant variables correlated with brain volume indices in patient and controls.
Table 3 shows significant variables correlated with brain volume indices in both sexes of patients with alcohol dependence.
Figure 1 shows the correlation between GGT level and Brain Ratio.

Conclusions: Our results showed that liver function was correlated with brain shrinkage in patients with alcohol dependence, but not in healthy control subjects. Especially, the correlation between GGT and brain shrinkage outweighed aging effect in female patients.

References: