

P02-317

ARE THERE STRUCTURAL BRAIN CHANGES FOLLOWING 10 DAYS OF SSRI ADMINISTRATION INVESTIGATED BY VOXEL-BASED MORPHOMETRY?

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Introduction: There is evidence that psychiatric diseases are accompanied by structural alterations in the human brain, partly reversible by pharmacological treatments. Several studies including Tost et al. (Nat.Neurosci.2010;13(8):920-2) investigated the effect of psychotropic drugs on neuronal plasticity pointing towards rapid pharmacologically induced brain grey matter variations, apart from already presumed slow structural changes within weeks. Here, we investigated the short-term (days) structural effects of SSRIs.

Objective: To identify structural changes of grey and white matter following 10d of oral administration (citalopram/escitalopram vs. placebo) in 18 healthy subjects investigated by magnetic resonance imaging (MRI) using voxel-based morphometry (VBM).

Methods:

Study design: Randomized, cross-over, placebo-controlled, double-blind study.

Subjects: 18 healthy caucasian subjects (6 female 24.8±2.5years, 12 males 28.9±6.7years)

MRI: 3 MRI scans/subject (3 Tesla scanner)

Treatment: 10d of oral medication intake of either 20mg citalopram/d, 10mg escitalopram/d or placebo in alternating order of administration

Data analysis: VBM, as implemented in SPM8.

Statistical analysis: analysis of variance (ANOVA, FWE corrected), post-hoc pair-wise comparisons.

Results: ANOVA (grey matter: $F(2,48)=18.85$, $p < 0.05$; white matter: $F(2,48)=17.79$, $p < 0.05$) did not reveal suprathreshold clusters in grey or white matter.

Conclusion: This VBM-study does not support previous short-time (days) MR findings of pharmacologically-induced structural alterations in the brain, considering the lack of significant changes in grey and white matter volumes following 10d of SSRI administration. This divergence may be caused by dissent pharmacological effects of SSRIs compared to other psychotropic drugs.