p=0.923) were significantly reduced in MDD. SPM with region-of-interest (ROI) analysis revealed that the gray-matter of right hippocampus (PFWE-correct=0.001) was significantly reduced. Results from the analysis of hippocampal subfields showed the reduction of areas included total Cornu Ammonis (CA) 2/3, subiculum, CA4/DG (Dentate Gyrus), presubiculum, hippocampus, CA1, and fimbria. No other areas showed significantly changed. Importantly, the reduction of CA2/3 (r=-0.367, p=0.023), and CA4/DG (r=-0.403, p=0.012) areas were significantly correlated with the clinical severity of depressive symptoms. **Conclusion:** Our data indicate that the hippocampal volumes were reduced in patients with first-episode, drug-naïve MDD. The reduced hippocampal CA2/3 and CA4/DG, which were well correlated with the clinical severity of depressive symptoms, reflect the important role of these areas in the pathophysiology of MDD.

**PS182**

**Association between BclI C/G (rs41423247), Hippocampal Shape, and White Matter Integrity of the Parahippocampal Cingulum in Major Depressive Disorder**

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**Abstract**

We investigated the interactive effects of BclI C/G (rs41423247) allelic variants and the diagnosis of major depressive disorder (MDD) on hippocampal shape and integrity of the left parahippocampal subdivision of the cingulum. Fifty-two patients with MDD and 52 healthy controls (HCs) underwent T1-weighted structural magnetic resonance imaging and BclI C/G (rs41423247) genotyping. We analyzed hippocampal shape using the FIRST module of FSL and analyzed white matter (WM) integrity using diffusion tensor imaging (DTI) and tract-based spatial statistics (TBSS). Significant alterations in left hippocampal shape and decreased fractional anisotropy (FA) values of the left parahippocampal cingulum were observed in MDD patients, compared to HCs. In addition, MDD patients of the BclI minor (G-) allele carrier group showed significant alterations in left hippocampus shape (FDR-corrected, p <0.05) and decreased FA values of the left parahippocampal cingulum compared to BclI minor (G-) allele carrier HCs. No significant differences between diagnostic subgroups of the C/C homozygotes were observed. Our study provides evidence for alterations in hippocampal shape and decreased integrity of the WM region associated with the hippocampus in MDD, and for the influence of BclI C/G (rs41423247) on hippocampal shape and integrity of the parahippocampal subdivision of the cingulum in depression.

**Reference**

[1] Lanzenberger R. et al. 2013 Mol Psychiatry; Jan;18(1):93–100
[2] Baldinger P. et al. 2014 J ECT. Jun;30(2):116–21
[3] Tzourio-Mazoyer N. et al. 2002 NeuroImage 15 (1): 273–289
[4] Meyer J.H. et al 2006 Arch Gen Psychiatry. Nov;63(11):1209–16

**PS183**

**Effect of electroconvulsive therapy on monoamine oxidase A binding - a preliminary report**

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**Abstract**

Electroconvulsive therapy (ECT) is an effective treatment option in major depression. Despite its approved effectiveness the underlying neurobiological mechanisms remain unclear. Neuroimaging findings particularly stress an involvement of the serotonergic neurotransmitter system in its mode of action [1]; however, so far investigations have been focussed solely on serotonin transporter and receptors [2]. The aim of this ongoing study is to assess the effects of ECT on monoamine oxidase A (MAO-A). Preliminary data of two patients are shown here.

Two subjects (1 female, aged 48 years, 1 male, aged 25 years) with severe unipolar depression (HAM-D, score≥24) participated in this study. ECT was carried out unilaterally (right-sided) according to international standard operating procedures; meanwhile antidepressant medication remained unchanged. Patients underwent 2 positron emission tomography (PET) scans using the radioligand [11C]harmine, one before and one after 8 ECT sessions. PET images were co-registered to structural magnetic resonance imaging scans and normalized using SPM12. PET scans were analysed using arterial input functions and the modelling tools in PMOD 3.509. Quantification of MAO-A distribution volume (Vₐ) maps was carried out voxel-wise with the Logan plot.

Relative change of MAO-A Vₐ, before and after ECT was assessed for 47 brain regions (AAL-atlas [3]). The vast majority of the regions showed a decrease of MAO-A Vₐ (42 and 46 regions, respectively) following ECT, with maximum decreases of 12.9% in the gyrus rectus. Decreases could be noticed also in regions with approved involvement in depression, such as the amygdala, the hippocampus and the cingulate cortex.

These preliminary findings point towards a reduction of MAO-A Vₐ, following treatment with ECT. This is in agreement with studies showing elevated MAO-A Vₐ in major depression [4], indicating that ECT might lead to a normalization of MAO-A levels.

**Reference**

[1] Lanzenberger R. et al. 2013 Mol Psychiatry; Jan;18(1):93–100
[2] Baldinger P. et al. 2014 J ECT. Jun;30(2):116–21
[3] Tzourio-Mazoyer N. et al. 2002 NeuroImage 15 (1): 273–289
[4] Meyer J.H. et al 2006 Arch Gen Psychiatry. Nov;63(11):1209–16

**PS184**

**Biophysical Alterations of the Brain in First-Episode, Drug-Naive Patients with Major Depressive Disorder: A Magnitization Transfer Imaging Study**

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**Abstract**

**Objectives:** Previous structural imaging studies have found evidence of brain morphometric changes in patients with major depressive disorder (MDD), which rarely excluded compound effects of medications and long duration of illnesses. In this study, we aimed to explore the neurobiological mechanism of the macroscopic findings of structural alterations in first-episode, drug-naive MDD patients.

**Methods:** The participants were 27 first-episode, drug-naive MDD patients and 28 healthy controls matched for age and gender. The study was approved by local ethical committee and written consent was obtained from parents of all the subjects. We utilized magnetization transfer imaging (MTI), a quantitative measure of the macromolecular structural integrity of brain...