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Introduction The aim of the study was to analyze the microstructural and metabolic features of the corpus callosum in recently onset schizophrenia.

Objectives 13 young (17–28 years old) male patients with recently onset schizophrenia (F20, ICD-10) and 15 sex and age matched mentally healthy subjects were examined.

Methods 3 T Philips Achieva scanner with 8-channel SENSE coil was used. DTI was conducted with EPI SENSE (TR=9431 ms; TE=70 ms). The values of diffusion coefficient (ADC), fractional anisotropy (FA), radial (RD) and parallel (PD) diffusivity were calculated using workstation Philips EBWS 2.6.3.4. Spectroscopic voxel (2 × 1 × 1 cm) was placed consequently in the corpus callosum genu and splenium. PRESS (TR/TE = 1500/40) was used.

Results In patients, increased ADC ($P=0.02$) and RD ($P=0.008$), decreased FA ($P=0.008$) and NAA ($P=0.03$) were found in the corpus callosum genu. No intergroup differences by PD, Cho, Cr, Glx were found in this area. Also, no statistically significant intergroup differences were observed for the DTI and MRS characteristics of the corpus callosum splenium.

Conclusions It has been shown that RD increase is associated with demyelination process. So, an increase of RD in the present study could reflect demyelination in CC genu. Cells membranes abnormalities should lead to an increase of Cho which was not found. NAA reduction could be caused by reduction of axonal integrity. The latter process is considered to precede demyelination and not to be accompanied by PD rise. Thus, the present study revealed axonal integrity reduction and low demyelination in the genu of the corpus callosum in the early stages of schizophrenia.

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EW0714

Frontal cortex myo-inositol is associated with sleep and depression in adolescents : A proton magnetic resonance spectroscopy study

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Aim This study used proton magnetic resonance spectroscopy (¹H MRS) to evaluate neurochemistry of the frontal cortex in adolescents with symptoms of sleep and depression.

Methods 19 non-medicated adolescent boys (mean age 16.0 y; $n=9$ clinical cases with depression/sleep symptoms and $n=10$ healthy controls) underwent ¹H MRS at 3T. MR spectra were acquired from the anterior cingulate cortex (ACC), the dorsolateral prefrontal cortex, and frontal white matter. Concentrations of N-acetyl aspartate, total creatine, choline-containing compounds, total glutamine plus glutamate, and myo-inositol (mI) were compared between the two subgroups and correlated with sleep and clinical measures in the total sample. Sleep was assessed with self-report questionnaires and ambulatory polysomnography recordings.

Results Concentrations of mI were lower in both frontal cortical regions among the depressed adolescents as compared to healthy controls. No statistically significant differences in other metabolite concentrations were observed between the subgroups. Frontal cortex mI concentrations correlated negatively with depression severity, subjective daytime sleepiness, insomnia symptoms, and the level of anxiety, and positively with total sleep time and overall psychosocial functioning. The correlations between mI in the ACC and total sleep time as well as daytime sleepiness remained statistically significant when depression severity was controlled in the analyses.

Conclusion Lower frontal cortex mI may indicate a disturbed second messenger system. Frontal cortical mI may thus be linked to the pathophysiology of depression and concomitant sleep symptoms among maturing adolescents. Short sleep and daytime sleepiness may be associated with frontal cortex mI independently from depression.

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EW0715

What make suicide depressions different from non-suicide ones: A diffusion tensor imaging study

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Introduction Depression is a common psychiatric disorder affecting many people globally, and the worst outcome is suicide. But its neurobiology is hardly understood.

Objectives To use DTI to characterize abnormalities of white matter (WM) integrity in major depressive disorder patients with suicide attempts or suicidal ideation.

Aims Present study aimed to give a more complete profile for the association of cerebral WM abnormalities with suicidal behavior in major depressive disorder patients by quantifying the suicidal ideation and behavior severity.

Methods Thirteen depressive patients with suicide attempts (SA), 14 depressive patients with suicidal ideation but no suicide attempts (SI), 13 depressive patients without suicidal ideation or suicide attempts (NSD) and 40 healthy controls (HC) received MRI scans on a 3 T magnet. Whole brain voxel-based analysis of FA based on DTI was performed among the four groups using a threshold of $P < 0.05$ with FWE correction. FA values were extracted by Marsbar software to quantify the changes.

Results The four groups had significant differences of FA in the in the left splenium of corpus callosum (peak $Z=5.36$ at $-14, -36, 22$). Quantify comparison revealed that SA had significant decreased FA value than SI, NSD, and HC. There was no significant difference among the other three groups, although there was a trend that SI and NSD had lower FA values than HC in this region.

Conclusions Depression and suicide are associated with microstructure abnormalities of the white matter and patients with suicide attempts may have severe cerebral alteration.

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