

Multimodality MR imaging of pathological changes in schizophrenia

Aim: To prove structural changes of the neocortex and white matter of the brain indicating connectivity disorder in early phases of schizophrenia.

Material and methods: A prospective monocentric study comparing a cohort of patients after the first episode of schizophrenia (on average 15.6 days after the initial hospitalization) with a control group of healthy persons. Probandes were examined using a complex MRI protocol. Twenty-six patients and twenty-four healthy persons were examined in total. Three dimensional T1 and T2 data and DWI data were analyzed using TBSS FA, FBA a surface-based morphometry.

Results: Large areas of dispersively decreased FA were found in patients compared to control group using TBSS. Several fixels of decreased FD metric were found using FBA in the anterior commissure of patients and one sporadic fixel of decreased FDC metric was found in frontal white matter of the brain. No statistically significant areas of cortical surface area and cortical thickness differences were found using SBM.

Conclusions: Large areas of decreased microstructural integrity of the white matter of the brain were found. However, it was not possible to specify the nature of its corruption using FBA. Our findings indicate the crucial role of the white matter of the brain in early phases of schizophrenia. Limited file size reduces the validity of our results.

Key words: First episode of schizophrenia, tract-based spatial statistics, fixel-based analysis, surface-based morphometry.