Annals of General Psychiatry

Oral presentation

White matter in schizophrenia: larger in volume, more disorganized, and more metabolically active

Monte S Buchsbaum*, Bradley R Buchsbaum, Adam Brickman, Mehmet Haznedar, Serge Mitelman, Jason Schneiderman and Lina Shihabuddin

Address: Mount Sinai School of Medicine, Department of Psychiatry, New York, NY USA
* Corresponding author

from International Society on Brain and Behaviour: 2nd International Congress on Brain and Behaviour
Thessaloniki, Greece. 17–20 November 2005

Published: 28 February 2006

Annals of General Psychiatry 2006, **5**(Suppl 1):S27 doi:10.1186/1744-859X-5-S1-S27

We examined the structural correlates of schizophrenia in three cohorts. High- resolution anatomical and diffusion tensor MR images were acquired in adult patients with schizophrenia (n = 106) and normal adult comparison subjects (n = 42). We also examined a subset of 37 schizophrenic adults and an additional 29 adolescents (15 m, 14 f, mean age = 16.07, SD = 2.00, range = 13–21) experiencing their first psychotic episode and age and sex-matched normal adolescents (10 m, 11 f, mean age 16.3). Lastly we examined FDG-PET in 68 unmedicated patients and 115 normal controls. Brain images were stereotaxically divided into 39 Brodmann areas and gray and white matter segmented and volumetrically quantified. Both early and late onset patients had volumetric reductions in the frontal and temporal lobe in comparison with age-matched normal volunteers. Patients with early onset schizophrenia had more marked volumetric deficits than older patients and these were most marked in the gray matter of the left temporal lobe. White matter was most decreased in the medial frontal lobe, cingulate gyrus, and frontal pole and relatively increased in other frontal and temporal areas. Diffusion tensor analysis showed lower than normal frontal and cingulate anisotropy in adults with schizophrenia but higher values than normal in adolescents with schizophrenia. A similar pattern was seen in the anterior thalamic radiations. Lastly, FDG uptake was increased in white matter, especially in the frontal lobe, corpus callosum and temporal lobe. These data suggest that gray matter volume decrease in schizophrenia is more marked than white matter volume decrease but the white matter is more disorganized as assessed by anisotropy measures and more active as assessed by FDG-PET.