

Fig. 1: Areas of brain volume change in first-episode schizophrenic patients measured with voxel-based and tensor-based volumetry.

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### Spectroscopy study of schizophrenic male patients with and without auditory hallucinations

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**Purpose:** The aim of this work is to correlate biochemical alterations in different brain locations (hippocampus and basal ganglia) in chronic schizophrenic male adult patients with and without auditory hallucinations.

**Subjects and Methods:** MR spectroscopy studies (1.5 T clinical MRI unit, Philips Gyroscan Intera, The Netherlands) were performed in 21 schizophrenic male patients (17 hallucinators, chronic and episodic, and 4 not hallucinators, mean age of 42 years) and 2 control subjects. A single volume <sup>1</sup>H magnetic resonance spectroscopy (<sup>1</sup>H MRS) (25x18x18 mm, TR 2000 ms, TE 31 ms; 256 measurements, 1024 samples to improve the study of Glu and Gln) was located in the left hippocampus. Moreover, a <sup>1</sup>H MRS imaging (<sup>1</sup>H MRSI) with 2 transversal slices (TR 2700 ms, TE 272 ms, with a region of interest of 110x100x23 mm) was localized including the basal ganglia and hippocampus. All spectra were transformed and analyzed with jMRUI and SIView (Spain) programs. Relative values of N-acetylaspartate (NAA), Creatine (Cr), Choline (Cho), and Glutamate and Glutamine levels in the left hippocampus were compared among groups in each region. The homogeneity of the magnetic field was verified by means of the width of the H<sub>2</sub>O signal in a nonsuppressed solvent sequence.

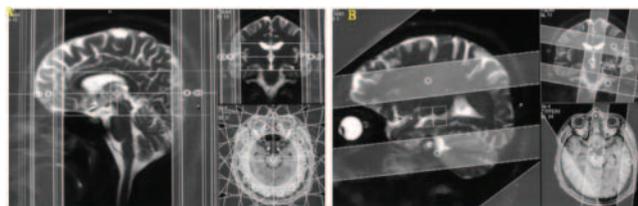


Fig. 1: Localization of <sup>1</sup>H MRSI (A) and a VOI (B).

**Results:** The average width of H<sub>2</sub>O signal was 6.12 Hz. In the left hippocampus and in both groups of patients, NAA and mI decreased whereas Glu (2.34 ppm) and Glx (2.12 ppm) increased with respect to controls. An increment in Gln (2.45 ppm) was observed, lower in the no hallucinators group. In the <sup>1</sup>H MRSI a bilateralisation with decrease of neuronal viability in right basal ganglia was found.

**Discussion/Conclusion:** Recent studies suggest that alterations in the Glutamate neurotransmitter might have an important role in the schizophrenia. MR spectroscopy showed differences between control subjects and schizophrenic patients, and between schizophrenic patients with and without auditory hallucinations.

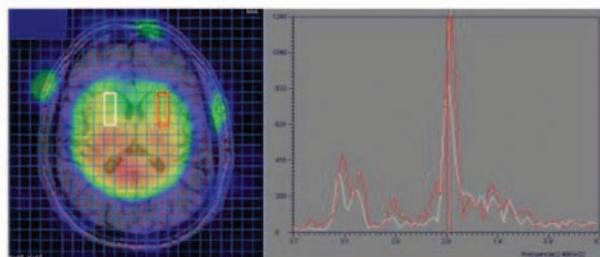


Fig. 2: <sup>1</sup>H MRSI, 110x100x23mm, TE272 ms, in no hallucination patient.

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### Rates of brain atrophy on MRI over 5 years in older depressed subjects

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**Introduction:** Depression in older people is associated with a poor performance on cognitive tests. These cognitive impairments often persist even after the depression has remitted. Depression is also associated with an increased risk of dementia. We have previously demonstrated with volumetric MRI that people with dementia have brain atrophy rates of 1-2 % per year, compared with 0.5 % for healthy individuals. The aim of this study was to examine rates of brain atrophy in older subjects with and without depression.

**Subjects and Methods:** We recruited 14 subjects with DSM-IV major depression at baseline (age 73 ± 8) and 19 healthy control subjects (age 73 ± 7).

Rates of whole brain atrophy, frontal lobe atrophy and temporal lobe atrophy were measured from two co-registered MRI T1 weighted scans taken 5 years apart, using the brain-CSF boundary shift method. Cognitive performance was assessed at baseline, and again at 5 years using the Cambridge Examination for Mental Disorders of the Elderly (CAMCOG) test

**Results:** There was no significant difference between groups in either rates of whole brain atrophy (control mean ± SD: 0.41 ±