**DIFFUSION TENSOR IMAGING STUDY OF THE FORNIX IN FIRST EPISODE SCHIZOPHRENEIA AND IN HEALTHY CONTROLS**

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**RESULTS**

Table 2. FA for First Episode Schizophrenics vs. Healthy Controls

Table 3. RD for First Episode Schizophrenics vs. Healthy Controls

Table 4. Trace for First Episode Schizophrenics vs. Healthy Controls

Table 5. AD for First Episode Schizophrenics vs. Healthy Controls

**CONCLUSIONS**

Our investigation shows the utility of applying imaging tools, such as DTI and tractography, to study white matter fiber tracts in vivo. Our results suggest abnormalities in the fornix in the early stages of schizophrenia.

**REFERENCES**


**METHODS**

**Subjects:** DTI and fiber tractography were used to evaluate fornix in 21 schizophrenic patients and 22 healthy controls, grouped on matched age, parental socioeconomic status and handedness. (See Table 1)

**ROI placement:** Regions of interest were drawn manually, blind to diagnosis, in order to guide tractography for tracking the fornix bilaterally from the crux through its posterior aspects. Through these regions of interest, fractional anisotropy (FA), radial diffusivity (RD), trace and axial diffusivity, were then calculated and averaged over the entire tract for each subject. (See Figure 1, 2 and 3)

**DTI acquisition:** Diffusion Tensor Images were acquire for each subject on a 3-Tesla GE scanner. We used an echo planar imaging (EPI) DTI Sequence double echo option to reduce eddy-current related distortions at a resolution of 1.7mm x 1.7mm x 1.7mm (51 diffusion directions at b=900, 8 baseline scans at b=0, TR 17000 ms, TE 78 ms, FOV 24 cm, 144x144 matrix) at Brigham and Women’s Hospital, Boston.

**RESULTS**

**CONCLUSIONS**

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**REFERENCES**


**BACKGROUND**

White matter fiber tracts, especially those interconnecting the frontal and temporal lobes, are likely implicated in schizophrenia. Very few studies, however, have focused on the fornix, a compact bundle of white matter fibers, projecting from the hippocampus to the septum, anterior nucleus of the thalamus and the mammillary bodies. Diffusion Tensor Imaging (DTI), and a new post-processing method, fiber tractography, provide a unique opportunity to visualize and to quantify entire trajectories of fiber bundles, such as the fornix, in vivo. We applied these techniques to quantify fornix fractional anisotropy, radial diffusivity, trace and axial diffusivity in schizophrenia.