

Abstract:

Tensor - based morphometry (TBM) performed using T1 - weighted images (T1WIs) is a well - established method for analyzing local morphological changes occurring in the brain due to normal aging and disease. However, in white matter regions that appear homogeneous on T1WIs, T1W - TBM may be inadequate for detecting changes that affect specific pathways. In these regions, diffusion tensor MRI (DTI) can identify white matter pathways on the basis of their different anisotropy and orientation. In the last couple of years, our lab has investigated the possibility of performing TBM using deformation fields constructed using all scalar and directional information provided by the diffusion tensor (DTBM) with the goal of increasing sensitivity in detecting morphological abnormalities of specific white matter pathways. In this talk I will present results that indicate that DTBM could be a powerful tool for detecting morphological changes of specific white matter pathways in normal brain development and neurological disorders.