

Abstract

Data analysis algorithm and procedure for visualization of human optic pathway by diffusion tensor mapping is presented. The quantitative measure of optic nerve neuropathy based on diffusion tensor data analysis is proposed. The approach can be considered as complementary to the standard analysis of diffusion-weighted magnetic resonance imaging particularly when artifacts due to eddy currents and susceptibility effects on scan acquisition together with unavoidable patient movement cause serious limits on the image quality. Also, a method of measuring relaxation times and series of qualitative tests of broad range of instrument parameters based on four different phantoms, where three of them were self-built, is presented. A planar diffusion visualization method is proposed and described. The last chapter introduces a new, simple, and mobile display that can be used for the simultaneous measurement of visual evoked potentials and magnetic resonance imaging.