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Preliminary Results of Cerebral Volume Measurement on DTI Images for Tinnitus Patients

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Tinnitus is defined as an unwanted auditory perception of internal origin, usually localized, and rarely heard by others. Persisting appearances of tinnitus are most commonly combined with diseases or damage in the inner ear or neuro-auditory pathway. Diffusion tensor magnetic resonance imaging (DTI) is a new imaging method with the capability of providing non-invasive information on tissue microstructure not available in routine clinical MRI images. Since white matter regions of the brain are an ordered structure due to the myelination and directionality of axons and have a high degree of anisotropy, the ability to detect changes in anisotropy can be extremely useful in the study of diseases such as tinnitus and multiple sclerosis, which are assumed to involve the demyelination of axons. While several studies investigated tinnitus using MRI, few studies tried to analyze neurological disorders quantitatively using DTI. In this study, the cerebral volume of white matter on DTI images of patients with tinnitus was measured using the semi-automated and intuitive menu based image processing system (Human Analyzer, ETRI, Ko-rea). Total number of ten patients with tinnitus including three women was examined.

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