Influence of N-acetylcysteine on brain glutathione and taurine levels in healthy controls and patients with focal epilepsy measured with 1H MR-spectroscopy

Summary / Zusammenfassung
Evidence of oxidative stress due to an imbalance between generation of reactive oxygen species and endogenous antioxidant defences has been demonstrated in epilepsy. Glutathione (GSH) is one of the most important endogenous antioxidants of the brain. Taurine has shown to be neuroprotective by its antioxidant properties and regulation of intracellular Ca2+ homeostasis. The rate of synthesis of both substances is influenced by the availability of their common precursor cysteine. N-acetylcysteine (NAC) can provide cysteine for GSH and taurine synthesis in the brain. 1H magnetic resonance spectroscopy (MRS) allows measuring non-invasively brain GSH, taurine, N-acetyl-aspartate (NAA), a marker for neuronal integrity, and glutamate, an excitatory neurotransmitter, and is therefore suited to monitor the effects of a treatment with NAC on the brain GSH and taurine levels and neuronal functionality.

Publications / Publikationen

Keywords / Suchbegriffe
oxidative stress, epilepsy, glutathione, taurine, glutamate, MR-spectroscopy

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