

Magnetization Transfer Contrast (MTC) 効果の定量による 等張性膝伸展運動前後の膝蓋軟骨の評価

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Abstract

Magnetization transfer contrast (MTC) is an imaging method which creates tissue contrast in a different manner as T1 and T2 relaxation time by the exchange of magnetization between macromolecular protons and bulk water, via cross relaxation or chemical exchange. Therefore it may be beneficial to evaluate articular cartilage using MTC, because it has abundant macromolecules and its function should be specified by macromolecular protons. 5 healthy volunteers performed 30 repetitive isotonic knee extension exercise with 20kg load. And MR images (MTC on and off) were obtained before and immediately after exercise. The M_s/M_0 , which means extent of decreasing of signal intensity due to MTC pulse, in patellar cartilage slightly increased after exercise in healthy subjects. This result suggests that water content and/or hydrate states in patellar cartilage may change due to exercise. We investigated the quantitative effect of MTC to evaluate the relationship between water and macromolecular protons before and immediately after isotonic knee extension exercise. The MTC technique would be a promising method to elucidate the effect of exercise on articular cartilage.

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