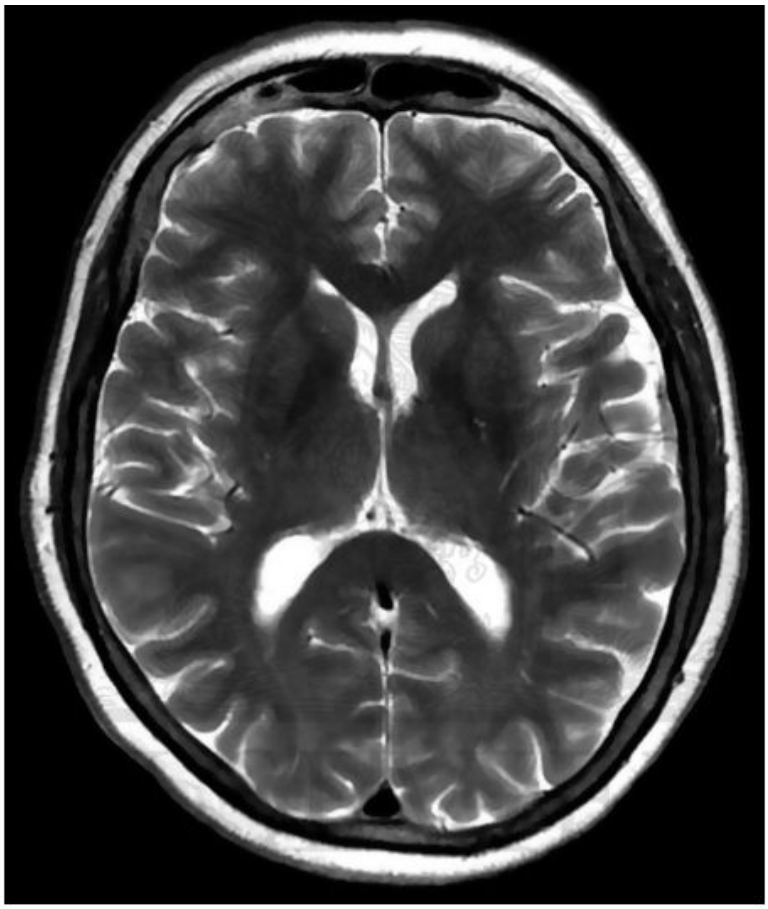
T2-weighted magnetic resonance imaging sequence

(also referred to as T2WI) is one of the basic pulse sequences in MRI and demonstrates the differences in the T2 relaxation time of tissues.



The T2WI relies upon the transverse relaxation of the net magnetisation vector (NMV). T2 weighting tend to have long TE and TR times.

Paramagnetic contrast agents, e.g. gadolinium-containing compounds, do not have nearly as significant effect as they do in T1WI.

Summary

TR: long TE: long fat: intermediate-bright fluid: bright

Quantitative T2'-mapping detects regional changes in the relation of oxygenated and deoxygenated hemoglobin and might reflect areas with increased oxygen extraction.

Motion-corrected T2'-mapping reveals significant and gradually declining values from healthy to perfusion-disturbed to apparent diffusion coefficient-restricted tissue. Current T2'-mapping can differentiate between the ischemic core and the perfusion-impaired areas but not on its own between penumbral and oligemic tissue [1)].

- A New Multi-Parametric MRI-Based Scoring System for Degenerative Cervical Myelopathy: The

Severity on Imaging Myelopathy Score (SIMS)
- Syringomyelia Associated with Magendie's Foramen Obstruction Due to Probably Congenital Gliomesenchymal Anomaly
- Multimodal Model for Non-Invasive Detection of DRD2, SSTR2 and ESR1 Receptor Profiling in Pituitary Neuroendocrine Tumors: A Retrospective Study
- Development of a Radiomic-clinical Nomogram for Prediction of Survival in Patients with Nasal Extranodal Natural Killer/T-cell Lymphoma
- Development and validation of a deep learning algorithm for discriminating glioma recurrence from radiation necrosis on MRI
- Structural White Matter Correlates of the Crowding Effect: Insights From a Tractography Study of the Arcuate Fasciculus Post-Hemispherotomy
- High-Resolution MR Imaging of the Parasellar Ligaments
- Detection of cerebral cavernous malformation associated developmental venous anomalies in gradient-echo and susceptibility-weighted magnetic resonance imaging: can we skip the contrast?

The relationship of the presence, absence or extent of intramedullary T2 signal change to clinical myelopathy, and to the likely outcome after surgery, remains complex and controversial.

More recent publications tend to indicate that T2 weighted signal change, particularly if multisegmental, is a poor prognostic feature for response to surgery.

1)

Bauer S, Wagner M, Seiler A, Hattingen E, Deichmann R, Nöth U, Singer OC. Quantitative T2'-mapping in acute ischemic stroke. Stroke. 2014 Nov;45(11):3280-6. doi: 10.1161/STROKEAHA.114.006530. Epub 2014 Oct 2. PubMed PMID: 25278559.