Magnetic Resonance Innovations

"Your partner in brain image analysis"

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IRON Quantification

SPIN IRON quantification module is based on the use of quantitative susceptibility maps (the intensity of which is given in parts per billion) which is representative of, and proportional to, the concentration of iron in the tissue (where 1µg of Fe/g wet tissue is roughly equal to 1.1 ppb in the SWIM images).

Based on one of our papers, we used a large cohort of 174 healthy subjects to establish a robust baseline of iron content in seven basal ganglia and midbrain structures as a function of age. Global analysis (3D whole-structural) and regional analysis (the pixel-wise high iron content region defined as susceptibility values higher than two standard deviations above the mean from the global analysis) were evaluated. As a result, the regional analysis has shown a much tighter linear age-related behavior in almost all structures. This novel method potentially allows the differentiation of normal from abnormal iron deposition providing physicians with another quantitative metric which may be useful in understanding the etiology and treatment requirements for different neurodegenerative diseases.

Features and Clinical Use

FEATURES:
* Fast, easy to use and reliable software
* Automatic labeling of 7 pairs of structures in the midbrain and basal ganglia
* Quantification of iron in each structure from either phase or SWIM data
* Supports single and multi-echo processing

CLINICAL USE:

* Multiple Sclerosis, Dementia, Parkinson's Disease, Huntington's Disease, Normal Aging & Cerebral Microbleed